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Quarterly History of Improvements and Discoveries, both at Home and Abroad, in Anatomy, Physiology, Pathology, Morbid Dissections, Surgery, Practice of Physic, Midwifery, Forensic Medicine, Materia Medica, Pharmacy, Chemistry, Botany, &c.

FORMING A USEFUL LIBRARY OF PRACTICAL REFERENCE.

(From Anderson's Quarterly Journal of the Medical Sciences, for Jan. 1824.)

I. ANATOMY.

The fundamental knowledge on which all medical science is primarily built, seems to be cultivated every day with more ardour, evidently in consequence of the greater importance which morbid and pathological anatomy is rapidly acquiring. The works of Lizars and Cloquet still keep the lead among those illustrated by figures; but there are many smaller works, both at home and abroad, well worth the study of the young surgeon; while several monographs on particular parts, concentrate all that is worth knowing respecting them. Dutertre's anatomical plates, according to the system of Chaussier, are good.

HORNER's *Lessons*.*—This work is somewhat on the plan of the manuals of Stanley, Green, and Shaw, and is highly creditable to the very active and rising medical schools of America.

The great work of Bichât† has lately been translated in rather a Frenchified style; it must be a great acquisition to the library

* Lessons in Practical Anatomy, for the use of Dissectors. By W. E. Horner, M.D. Adj. Prof. Anat. Univers. Pennsylvania.

† General Anatomy, applied to Physiology and the Practice of Medicine. By X. Bichât. Translated by C. Coffin. Part I. p. 743. Lond. 1824.

of those who cannot peruse the original; though we should prefer seeing it in a more compendious form. May we ask what has become of Mr. Wallace's work on this compendious plan, which has been so long announced as in the press? Beclard's work,* reviewed in our last number, is precisely formed on this plan, and is excellent.

TIEDEMANN *on the Nerves of the Uterus.*†—This celebrated anatomist, whose discoveries we have so often to praise, has recently published a splendid work with plates, on the obscure and difficult subject of the uterine nerves. They form six plexuses, and he traces them to the great sympathetic of either side, which sends, contrary to the common opinion, many considerable branches to the uterus. These nerves are soft, reddish, and are applied to the coats of the arteries on entering the substance of the uterus, where they all at once disappear.

"The first he calls the spermatic, or common plexus of the ovaries and Fallopian tubes: it is situated on the anterior face of the abdominal aorta, at the root of the internal spermatic artery. Composed of many filaments which come from the renal nerves of both sides, descends into the pelvis with the spermatic artery, and goes to distribute itself principally on the ovary and Fallopian tube, although a few branches are likewise sent to the uterus. The second, which is the most important to the whole, is denominated the *great superior lumbar plexus*, or common uterine: it arises from the renal and superior lumbar ganglions of the great sympathetic; it is situated before the fifth lumbar vertebra, before the common iliac arteries, and extends to the promontory; there it divides into two portions, which penetrate into the pelvis, where they immediately form two plexuses, which he calls the hypogastric or lateral uterine, and to which some threads run from the first and second ganglions. Each of these plexuses sends many filaments to the uterus; they accompany the uterine artery, with the ramifications of which they penetrate the substance of that organ. From the sides of the superior lateral hypogastric plexus, many branches go off to the neck of the uterus and vagina, and which, having united with anterior branches of the third and fourth sacral nerves, form a grand plexus, which the author calls the inferior lateral hypogastric. This plexus supplies branches to the uterus, vagina, bladder, and rectum; the ramifications always accompany the uterine artery, which they surround like net-work."

MECKEL's *Comparative Anatomy.*‡—The first volume only of this very erudite work has appeared from the German press, containing general anatomy, which would, we think, have more naturally followed the particular anatomy, as the parts must be

* Elémens d'Anatomie Générale, &c. Par P. A. Beclard, d'Angers. p. 728, 8vo. Paris, 1823.

† Tabulæ Nervorum Uteri. F. Tiedemann, M.D. Heidelberg.

‡ System der vergleichenden Anatomie. J. F. Meckel. Halle.

known before general inferences can be understood. We shall give a specimen of his generalizing.

"*Law of Variety.*—This is the first law of animal formation, and is founded both on the diversity of individuals, and the varieties of organized bodies in general. The same organization is composed of parts, organs, or systems, more or less different, and the divisions of the same system are also varied; while different organizations vary from one another, as much in degree as in kind, as in those groups called by naturalists, varieties, species, genera, orders, classes, &c.; which, more or less, mutually approach or recede. There are also the two great divisions, male and female, in general less striking, but not less remarkable. This law is also manifested at the different periods of life, by what may be called *periodic diversities.*"

"*Law of Identity, Analogy, and Reduction.*—This is the second law of primal formation, without which, as it points to resemblance, the first law could not be understood, as organized systems coincide with one another in certain general conditions of form, in spite of their differential characters. The character of the species, for example, is deeply impressed upon the organization, notwithstanding the general resemblance of the general organization."

All this appears to us to be extremely useless, either for the purposes of science or the art of dissecting; while it is in some measure unintelligible, it appears scarcely worth understanding. The great subject of controversy respecting the classification of the animal kingdom is taken up by M. Meckel, and he refutes with great learning, the antagonists of the system of vertebrated and invertebrated animals. His division is different from Cuvier's.

"*Divisions of the Animal Kingdom.*—1. Protozois; 2. Echinodermata; 3. Annelides; 4. Insecta; 5. Arachnides; 6. Crustaceæ; 7. Cirrhipedes; 8. Molluscæ; 9. Pisces; 10. Reptilia; 11. Aves; 12. Mammiferæ."

He places the cephalopodes between the vertebrated and invertebrated animals, because they have the rudiments of a vertebral column. His greatest effort of generalization is to trace the numerous diversities of animal forms to a *primitive type*, which, according to him, can always be discovered both in regular and anomalous instances.—This we consider to be altogether an absurd dream. We should greatly prefer indeed, M. Meckel's really anatomical researches, to such useless speculations.

M. Geoffroy's *Osteologié.**—By new illustrations taken from recent dissections, this distinguished naturalist proves his former position, that "fishes, in their first age, are in the same

* Considerations et Rapports Nouveaux d'Osteologie Comparées. Par. M. Geoffroy, St. Hilaire.

condition, relatively to their entire development, as the fœtuses of the mammalia." Our author, ingenious as we allow him to be, has a most determined propensity to travesty established facts, and confound all our previous knowledge, by his efforts after originality: the calling the shell of a lobster its spine, for example.

M. Bailly's *Anatomy and Physiology of the Nerves.**—This Memoir contains a very ample and complete account of the recent researches respecting the nerves, with certain claims of the author to priority of experiment, in several points, to M. Magendie.

Dr. Knox *on the Eye.*†—In a very excellent paper in the Edinburgh Philosophical Transactions, Dr. Knox has given some curious facts respecting the comparative structure of the parts of the eye. The author regards as two distinct membranes, the internal lamina of the sclerotic coat, and the membrane of the aqueous humour. He also calls the ciliary ganglion, the ciliary muscle; and contrary to other anatomists, finds the *foramen centrale* of Söemmering in several animals, such as in some lizards.

M. Auzoux's *Anatomical Imitations.*‡—This ingenious young man has contrived Anatomical models which can be taken to pieces as in dissection, showing the natural situation and colour of all the bones, muscles, viscera, glands, vessels, and nerves;—and though we do not approve of studying anatomy in this way, yet it may be turned occasionally to very good account in demonstrations as well as in private study.

II. PHYSIOLOGY.

The experimentalists in this department continue to pursue their researches with unabated vigour, though we think, that Pathology is gaining ground on Physiology, at least in the number of inquirers. We are glad to observe this, though we fear it may be carried too far: they ought always to go hand in hand.

Dr. Hale's *Prize Dissertations.*§—Our brethren in America deserve very highly of the profession, not so much for their original discoveries as for their careful repetition of the experiments of others, and adding additional proofs to important facts. Dr. Hale, in writing for the Boylston prize, undertook

* Memoire sur le Traité d'Anatomie et de Physiologie comparées du Systéme Nerveux, &c. Par. E. M. Bailly, D. M. P. &c.

† Observations on the Comparative Anatomy of the Eye. By Robert Knox, M.D.

‡ Bulletin des Sciences Medicales.

§ Boylston Medical Prize Dissertations, &c. By E. Hale, jun. M.D. pp. 135. 8vo. Boston.

to repeat, in many instances, on his own person, the experiments of Darwin, Home, and others, respecting the communication between the stomach and the urinary organs. We cannot spare room for the experiments themselves, which were conducted, however, in some cases, with more ardour than accuracy—but we shall state, as a specimen of the work, the conclusions he deduced.

1. "The speedy discharge of watery urine, after taking a large quantity of liquid in drink, is not occasioned by sympathetic excitement of the urinary organs, but by the actual excretion of the fluid received.

2. "The same portions of fluid, which are received into the stomach, begin, under certain circumstances at least, to be collected in the bladder within twenty minutes from the time when they are taken.

3. "When a large quantity of fluid is taken, the excretion of urine is greatly increased; but the increase does not bear any very exact proportion to the quantity of drink. The increased discharge begins in about twenty minutes, is at its height in about an hour, and terminates generally in less than two hours.

4. "When a liquid, which is coloured with rhubarb, is taken, the colour of the rhubarb appears in the urine; and its appearance in that excretion is not at all confined to the time of the increased discharge, which is occasioned by the quantity of fluid received.

5. "When a liquid, which is of such a nature as to admit of ready detection in the animal fluids, is taken into the stomach, if the quantity is sufficiently large to affect the whole mass of blood, it will be found in the blood drawn from the veins as soon as in the urine; although it will continue to appear in the urine after it has disappeared from the blood.

6. "When a quantity of colouring matter, sufficient to affect the whole mass of blood, is taken, mixed with a large quantity of liquid, the colour appears in the urine as soon, at least, as the excretion begins to be increased, and is at the deepest before the increase of urine is at the height; but if the quantity of colouring matter be only a little more than sufficient to tinge the amount of liquid taken, it does not appear in the urine until after a quantity of watery urine has been passed, and does not give its deepest colour until after the excretion has diminished."

M. Geoffroy *on the Respiration of the Fœtus.**—Our author read a Memoir on this interesting subject, to the Academy of Sciences in November last. Setting out with the principle that there is no organization without the combination of a fluid, and no assimilation without oxygenation or respiration: he tried to prove,

"That a respirable gas exists in the liquor amnii, the presence of which appeared to be indicated in the experiments of MM. Chevreul

* Revue Medicale. Dec.

and Lassaigne.—That the fœtus, by means of its pores like the tracheæ of aquatic insects, separates the air contained in the surrounding fluid, and brings into contact with it the venous blood filling the vessels of the skin.—That the contraction of the uterus and the abdominal muscles, forms the compressing power which directs this phenomenon in the same manner as in the act of ordinary respiration."

That this *may* be so, we shall not deny; but we confess, that to us it appears equally fanciful with most of the author's researches.

M. Flourens' *Memoirs on the Nervous System.**—The imputation of having borrowed from Rolando, seems to have stimulated our author to redoubled exertion, as will be seen from the following notices of Memoirs read by him at the sittings of the Academy of Sciences:—

"In his preceding experiments, the author has established, that the removal of the lobes of the brain was followed by loss of sight and hearing. In order to ascertain if the other senses were destroyed in the same manner, he endeavoured to ensure, as long as possible, the survival of animals in which he had removed those parts: and some, in fact, did live six, eight, and ten months. During that period, they gave no signs of sensation or volition, whence he concludes that those powers reside exclusively in the lobes of the brain.—In experiments made to ascertain if all the sensations remained in the same situation, or each in a distinct one, he found that in graduated injuries of the cerebral lobes, if one sensation remains, all do; if one be lost, so are all; and, consequently, the faculty of sensation is essentially but one. The experiments of M. Flourens tend, also, to prove that injuries of the cerebral lobes, tubercula quadrigemina, and cerebellum, produce symptoms affecting the opposite side of the body, whilst it is the reverse in injuries of the medulla spinalis and oblongata.

"At the sitting of October 27th, M. Flourens read a Memoir on the action of the nervous system in the involuntary motions. He had been induced to believe that the regulation of the powers of locomotion resided in the cerebellum. He wished to ascertain whether there did not exist some similar centre of regulation of the involuntary motions. Very varied experiments on the influence of the parts of the spinal cord and encephalon, have led him to place this centre in the medulla oblongata. All the involuntary motions, however, are not derived from and regulated by this centre, but only respiration, and the motions connected with it; the motions of the circulatory and digestive system depending only mediately and consecutively on the nervous system. Thus M. Flourens has seen circulation continue a considerable time in animals recently born, although the nervous system had been destroyed, and when, consequently, their blood was black.

"Sitting of November 24, 1823, M. Flourens read another Memoir,

* Revue Medicale.

on the determinate, or specific action of certain substances on particular parts of the brain.—It is known that certain substances, introduced into the digestive or circulatory system, act specifically on the brain; but it had not hitherto been explained why these substances, all acting on the same organ, should produce different results. M. Flourens, whose previous experiments had shown that the brain was composed of parts having different functions, made additional ones to explain these singular differences, by the specific action of particular substances on particular parts of the brain.—The result is—1. That, in giving doses, opium acts exclusively on the cerebral lobes; belladonna on the tubercula quadrigemina; and alcohol on the cerebellum.—2. That the consequence of the action of each substance on such part, is absolutely the same with that of mechanical injury.—3. That the action of each substance always leaves after death, and even determines during life, traces sufficient to distinguish the organ affected from the others.—4. That camphor, ether, &c. act in a similar manner to alcohol; the aqueous extracts of hyoscyamus, lactuca virosa, &c., in a manner analogous to opium.

The Number of Magendie's Journal of Physiology* just received, contains only three papers, namely the continuation of M. Gaspard's important researches on putrid diseases; continuation of M. Oudet's paper on the teeth; and M. Demoulins on the use of the colours in the choroid coat of the eye. M. Oudet tries to prove from an extensive examination of the teeth of vertebrated animals, and particularly of rabbits,

"That—similar to corneous productions as to the organic actions which precede and accompany their formation, or preside over their growth—the teeth are to the mucous system, what the horns, the hair, and the nails are to the cutaneous system.

These consequences, therefore, of his experiments, ought, M. Oudet thinks, to be regarded as the completion and experimental demonstration of the theory of dentition, given by John Hunter, and adopted by M. Cuvier.

Among other curious observations in M. Demoulin's paper, he has proved the fact already announced by MM. Magendie and Blondel, that the mole has no optic nerve, by proving it to be destitute of the foramen in the sphenoid, through which it should pass: some other animals likewise want this. His great aim, however, is to show that both as regards Nyctylopes and Hemeralopes, the choroid, is by means of colour, endowed with more or less of a reflecting power, according as the wants of the animal require it. This paper is evidently a continuation of

Demoulins' *Memoir on the Surfaces of the Retina.*†—The folds of

* Journal de Physiologie Expérimentale et Pathologique. Par F. Magendie, &c. Tome iv. No. 1.

† Memoire sur le Rapport qu'a l'Etendue des surfaces de la Retine, &c. Par M. A. Demoulins, D.M.P.

the optic nerve were not found to be necessarily coincident with that of the retina. His most important proposition, however, supported by many facts, is that there is a constant coincidence between the degree of energy and extent of vision, and the extent of the surfaces of the retina and optic nerve; and that the same proportional coincidence is found with respect to the volume of the optic lobes, or *tubercula quadrigemina*, at least in birds and fishes. He has also refuted in this Memoir some of the statements of Flourens and Serres.

Lawrance and Coates *on Absorption from the Brain.**—Dr. Coates, of America, has given a brief notice of some experiments made by him conjointly with the late lamented Dr. Lawrance. The following is Dr. Coates's statement:—

"That absorption takes place in the brain has often been inferred from the effects of disease and from analogy. This has lately been much strengthened by those observations which go to prove that the veins perform this function. The fact has, however, been often denied, and we know of no positive or experimental proof of it. Since learning the advantage afforded in investigations of this nature, by the use of prussiate of potass, we thought it might assist in ascertaining this point, and we accordingly now have direct evidence of absorption from the contents of the pia mater.

"About a drachm of the saturated solution of prussiate of potass was injected into the brain of a half grown kitten; the operation was followed by immediate apoplexy. In a short time, the salt was discoverable in the serum of the blood of the right side of the heart, as well as in several other parts of the body. In one experiment, the trials were not made for four or five hours, the animal having been long dead; and in this case some uncertainty was thought to exist; but in a subsequent one, the fluids, &c. were examined in about an hour, and the results as stated above. It should be borne in mind, that the injected liquor penetrated the ventricles, as well as the lacerated cavity it formed in the brain. I believe the cavity is in the same general predicament with the brain, and has been equally denied to perform absorption."

Dr. J. T. Todd *on the Re-production of Members.*†—The subject of this paper, though not altogether new, is very interesting. The author has the merit of describing the changes consequent on the process, with more minuteness and accuracy than we have before met with them. When a limb is removed from the aquatic salamander, inflammation follows, and a cicatrix is formed as in the other vertebrated animals, but the extremity is enlarged and bulbous. From one to six days after the cicatrix is formed, a red, soft point projects from the centre, whence a glutinous secretion oozes. In a few days more, this point,—ascertained by the microscope to be a cluster of blood-

* Experiments on Absorption from the Brain. By the late Dr. J. O'B. Lawrance and by Dr. B. H. Coates.

† Brande's Journal of Science, No. XXXI.

vessels—enlarges into a cone, composed of grey semi-transparent coagulable lymph, and covered by a thin membrane. As this cone elongates—the red point disappears usually in about twelve days. This process goes on thus till the first articulation is completed; when the same process goes on in the formation of the second, and also of the foot and toes. The whole limb, when first formed, is small and feeble, and it is usually twelve months before it is equal to the others. The tail, when cut off, grows again to its original size in a much shorter period.—Dr. Todd goes on:—

"From the very interesting experiments of my ingenious friend, Professor San Giovanni, of Naples, I am authorized to conclude, that although the re-productions of the earth-worm present some specific differences, yet the general process is the same. I am entirely indebted to his liberality for the following account of it. When earth-worms are divided at the lower edge of their great ring, if they survive the injury, which they generally do, thrice in twenty times, the separate parts gradually diminish in circumference, the wounds cicatrize, and the cicatrix, which is of a bright red colour, is surrounded by a round projecting band (bourrelet). In the anterior half, re-production goes on rapidly; for in twenty-four days from the beginning of the experiment, four or six of its rings are already re-produced, in all about four or five lines in length. As soon as the re-production commences, the round projecting band ceases to be observed. The new production is transparent, of a clear reddish colour, and of the same size and diameter as the rest of the body. The anus is perfectly formed, and the parts of vessels, nerves, and alimentary canal, belonging to the new growth, can be observed, as well as the lateral filaments distributed by pairs to each of the new rings. The great ring, it is worthy of remark, entirely disappears during its re-production. The process continues to proceed in the same manner, though with less rapidity, being apparently much influenced by the season of the year. Two hundred and thirteen days from the commencement of the experiment, the anterior halves have each re-produced 25 or 26 rings, the new growth become gradually redder, less transparent, and more perfectly organized. Their diameter is every where equal, as well in the new part as in the old; so that the new tail continues conical, instead of being flattened as in the original.

"The process of re-production is much slower in the posterior halves. They preserve a healthy and well nourished appearance, their anterior extremity cicatrizes and tapers very much, becoming more so until fifty-five days from the beginning of the experiment, and the new growth be distinctly perceived, when only three or four new rings are observed at the anterior extremity, their termination, the seat of the head assuming a pointed conical form, approaching nearer that of the natural head. Two hundred and thirteen days from the beginning of the experiment, the posterior halves have each re-produced five or six rings, and the head, in appearance, (for it does not

appear that its real organization was determined by dissection) only differing from the natural one in being more obtuse and less tapered. Thus, from the division of these worms, Professor San Giovanni obtained six perfect ones, which he submitted to the inspection of the Royal Academy of Naples, in May, 1815."

M. Breschet's *Experiments on Digestion.**—These experiments are like several of the recent American ones, less original than confirmative of others. We cannot indeed have too many proofs of interesting facts which require much research, and these go to confirm many of the experiments of Le Gallois, W. Phillip, and Brodie, respecting the influence of the nerves in digestion. The experiments themselves, being so very analogous to those already known, we shall not detail, but shall merely state the conclusions resulting from them.

1. "The simple section of the pneumonic gastric nerves in the neck, without loss of substance, and without altering the position of their extremities, does not prevent digestion from being performed; it only retards it in a very evident manner.
2. "The division of these nerves, with a loss of their substance, considerably diminishes the digestive actions of the stomach, but does not appear entirely to abolish it.
3. "The division or destruction of the lower part of the spinal marrow, or the removal of a portion of the brain, is productive of the same effects as to the alterations which food undergoes in the stomach.
4. "Narcotics, administered in such a manner as to produce coma, equally diminished the digestive power.
5. "Every thing that diminishes the sum of the nervous influence transmitted to the stomach, impedes digestion.
6. "When digestion is completely suspended by the section of these nerves with loss of substance, that action may be re-established by means of galvanism, and the food contained in the stomach converted into chyme, with almost as much rapidity, and to all appearance as completely, as under ordinary circumstances."

MM. Prevost and Dumas *on the Urinary Secretions.*—The Swiss physiologists are directing their researches into all parts of the animal economy, as will be seen from our former records of their experiments. The basis of healthy urine is the chemical substance called urea, but there are usually about thirty different substances in it besides. As rabbits do not bear extirpation of the kidneys well, our authors selected dogs and cats. One kidney was first removed, and in about a fortnight afterwards, when the wound was healed, the other. The first

* De l'Influence du Systéme Nerveux sur la Digestion. Par MM. Breschet, Edwards, et Vavasseur. Mémoire lu à la Societé Philomatique

operation has little effect on the health; but in three days after the second operation, there are copious liquid brown stools, and vomiting of similar matter, rapid small pulse, great constitutional disturbance, and laborious respiration, which, in from five to nine days, terminates in death.

"*Dissection.*—In the ventricles of the brain are effusions of limpid serum; the bronchia filled with mucus; inflamed liver; strong contraction of the urinary bladder; and the intestines replete with liquid fæces.

"They calculated that a healthy dog, before the operation, produces about a drachm of *urea* daily; after the operation, five ounces of blood were found to contain a scruple of *urea*. They are led to agree with the opinion, that the *urea* exists previously in the blood, and that, as it is formed in the blood, it is separated from it in the kidney by elimination. They have not yet ascertained where the urea originates."

MM. Prevost and Dumas *on Muscular Contraction.**—In a state of rest, the muscles have their fibres parallel and united into fasciculi by cellular texture. But when excited to contract, by a galvanic current, the fibres, if placed under a microscope, and sufficiently transparent, are instantly seen to be thrown into a zigzag form, though there is no difference of bulk thence produced. The elementary nervous fibres they found to traverse the muscular fibres always at right angles. Now, by a galvanic current traversing the nervous filaments, which are good conductors, and well isolated in fat, the above phenomenon is thought to be explicable, as they will, according to a known law, approach one another, carry with them the attached muscular fibres, and cause the above contraction and the consequent shortening of the muscle.

III. PATHOLOGY.

The rapid increase of contributions in this department, renders it very difficult to do it justice in the narrow limits of this sketch; but we shall exert ourselves to let nothing of moment escape us, and when we cannot spare room under this division, we shall introduce more extended papers in the body of our Journal. This we shall do with an interesting paper now before us, by M. Boyle, on Paralysis and Apoplexy, establishing the fact that paralysis may exist in the same side with the cerebral lesion which occasions it.

* Archives Générales de Médecine.

Dr. SCUDAMORE *on the Blood.**—The author—already well known for the most elaborate treatise on gout ever published—has, in this Essay, gone into a very extensive inquiry, by experiment, into the changes produced on the blood by disease. The experiments detailed are about one hundred, and the conclusions from them seem to possess interest. We may, remark, however, that Dr. Scudamore, while he is in general a *solidist*, contends

"That we ought, both theoretically and practically, to have some regard to the tenets of the *humoral pathology*; and allow ourselves to reason upon the probable chemical influence of different medical agents on the blood itself."—p. 155.

Dr. COPELAND *on Cerebral Excitement and Blood-letting.*—We consider the following views of Dr. Copeland as of very great practical importance: on the younger part of the profession, in particular, they cannot be too strongly impressed, nor too often repeated. Cerebral excitement may be consequent upon inflammation, general plethora, or local determination; but it is not necessarily so, according to the prevalent, but erroneous opinion. If we bleed a man, or other animal, frequently, either when in good health, or labouring under cerebral excitement, we shall produce, in proportion to the depletion, symptoms of determination to the brain—delirium—and death, with cerebral derangement up to the latest moment of existence; and, on dissection, the brain will be found gorged with blood, that is, in comparison with any other part of the body. The only exception to this is, where the loss of blood has been so great and sudden as to produce instant death. In profuse uterine hemorrhage, how often is it necessary to watch the patient with the utmost care to prevent mental derangement? Irritative fever almost always supervenes in consequence of the cerebral excitement, and notwithstanding the uterine irritation, which might be supposed to counteract it.

Cerebral excitement and local determination are also produced most commonly—independent of depletion—by a low state, or debility of the system; and to those whose health is vigorous, the maxim "ubi irritation ibi fluxus," seldom applies; and whether the irritation be physical or moral, the observed effects will be proportional to its intensity, and to the state of the system.

* An Essay on the Blood, comprehending the chief Circumstances which influence its Coagulation; the Nature of the Buffy Coat; with a concise Medical View of the State of the Blood in Disease, &c. By Charles Scudamore, M.D. F.R.S. &c. 8vo. p. 162. Longman and Co. London, 1824.

M. Striebel *on the Symptoms of Diseases.**—This useful volume is chiefly directed to the pathological phenomena of Nervous Diseases, and to what the author chooses to call Chorea Rachita. A work of this kind, which is meant chiefly as a text book, is not well suited for extract or analysis.

M. Wendt *on Mesenteric Inflammation.*†—This author, in the last volume of the Transactions of the Royal Society of Medicine of Copenhagen, has given an interesting case of insidious mesenteric inflammation. The patient, a boy of five years old, was left in a weak state from a convulsive cough—when suddenly he complained of pains in his limbs. Next day he was seized with vomiting, great redness of the eyes, and stupid expression of countenance. The pulse and tongue were natural. His manner was languid, and occasionally delirious. The abdomen was neither swelled, nor painful on pressure—but he complained of pain in his lungs. He sunk into a typhoid state, and expired on the fifth day.

Dissection.—The portion of the mesentery, connected with the whole length of the jejunum, was inflamed, extending more widely along the back, but not affecting the intestine.—Three dissections are mentioned by M. Wendt, in which ulcerated openings were discovered in the mesentery, discharging pus copiously. He believes such cases not to be uncommon.

"M. Andral, jun. *Case of Aneurism of the Aorta, opening into the Trachea.*‡—Our author presented to the Academy of Medicine a case of this description. It was remarkable, inasmuch as there was not any sac, strictly speaking, but only an augmented capacity of the artery, admitting the introduction of the fist, and, at the same time, a great thickening of its parietes. The perforation of the vessel appeared to have taken place by a sort of ulceration of its coats. During life, the disease had presented no other sign than an indefinable rustling at the top of the sternum, without actual pulsation. There existed, also, considerable emphysema of one of the lungs, which M. Andral had recognised from the symptoms indicated by M. Laennec, viz., the absence of respiration on the affected side, together with the existence of great sonorousness."

Leprosy of Norway.§—It is no uncommon thing to refer cutaneous affections to the eating of dried or salted fish. It is from a different cause that a sort of leprosy—having some af-

* Beitrage Heilwissenschaft. Von S. Striebel. 8vo., Francfurt, 1823.

† Acta Regiæ Societatis Medicæ Hafniensis, vol. vi. Hafniæ, 1821.

‡ Un Anéurysme de l'Aorte ouvert dans la Trachée artére. Par M. Andral, fils.

§ Sur la Lépre de Norwége; poisson lépreux. Ann. Marit.

finity, perhaps, to sea scurvy—is endemic in Bothnia, Finland, Œland, and Gothland. Dr. Martin traces it to fish infected with this complaint, and says he has repeatedly observed fish diseased in this way. The symptoms of the disease are, emaciation and a cachetic look, followed by tumours, which sometimes suppurate, and are sometimes filled with blood or sanies. When these ulcerate, the glands put on a leaden hue, and the skin becomes scaly and wrinkled. As the disease advances, the whole glands of the body become engorged; the feet œdematous; the eyebrows are depilated; and the eyelids, lips, and palate are pale. In the last stage the nostrils are obstructed, while the glands about the nose and lips pour out blood and sanies. It sometimes continues for twelve or fourteen years before it reaches the last stage.

*Syphilitic Inoculation.**—Following the theory that there is no such thing as any specific virus, three students of medicine at Paris undertook to prove the truth of it. Accordingly, they inoculated themselves with matter from venereal sores, by means of lancet punctures in the arm, as in vaccination. In one of the cases, the operation was followed by enlargment of the glands of the axilla, and was treated as a simple inflammation, in conformity to the theory; but, in spite of this, the swelling went on—suppurated—destroyed part of the substance of the axilla—and the ulcer is still open. In another of the cases, the puncture became inflamed and ulcerated; a chancre formed, with all the usual characters of a venereal sore; and was treated, as the preceding case, on the supposition that it was simple inflammation. The ulcer spread in an alarming manner; the patient consulted an eminent practitioner, and, on being informed that it was genuine syphilis, and that he must undergo a mercurial course, the infatuated youth opened the crural artery, and put an end to his existence.—This, we think, ought to deter others from such rash experiments.

Phthisis incompatible with Intermittent.—It was long ago remarked, that in the countries which are most liable to intermittents, phthisis is comparatively rare. Holland, Flanders, and some countries in England, were quoted as instances. We observe, that the American physicians have added strength to the opinion, by extensive observations in the districts where intermittent prevails.

Dr. Davy *on the Absorption of Gases.*—In consequence of certain phenomena which occurred in a case of pneumo-thorax,

* Inoculation Syphilitique. Bulletin des Sciences Medicales.

Dr. Davy was led to try, by experiment, the power of internal membranes to absorb gas.

"Atmospheric air was injected into the pleura of a dog, and the opening through the parietes of the chest closed by suture: at the end of forty-eight hours the animal was killed. An hour after, the pleura was opened, and about eight cubic inches of air were collected, which showed slight traces of carbonic acid gas, and consisted of ninety-three of oxygen, and seven of azotic gas, in the hundred. The result, then, of this experiment, (says Doctor Davy,) seems to show, that the oxygen was absorbed in a greater proportion than the azote, and thus tends to account for the accumulations of the latter gas in the preceding case. With regard to the carbonic acid gas, it is conceived to have been formed in the lungs as in the ordinary respiration, and mixing with the air inspired, was thus received into the pleura: if so, it would seem to prove that this gas was less readily absorbed by the pleura, than oxygen."

"The result justifies the opinion of the author, that the carbonic acid gas was not formed by secretion from the pleura, but, on the contrary, it would appear that this membrane has the property of absorbing gases, exhibiting a preference for one another; and the discovery of this circumstance led Dr. Davy to pursue the subject farther.

"The obvious results of these two experiments in the same dog, are, 1st, the absorption of the greater part of the carbonic acid gas, and the whole of the hydrogen, introduced into the pleura, and the appearance *de novo*, of a considerable quantity of azote: 2dly, the death of the animal in the space of five hours from the time of admission of the nitrous gas and azote into the opposite pleura; the absorptions of the greater part of the former gas, without inflammation of the membrane, with which it was immediately in contact; and the production of a peculiar change in the blood."

M. Itard *on Cerebral Inflammation.**—The obscurity which hangs over the history of malignant intermittents is well known. M. Itard has endeavoured to remove this: and refers for the cause of obstinate intermittents very liable to return, to some latent chronic inflammation. There are few practitioners, who have not seen latent inflammations of the pleura, or of the lungs —before taking the character of pulmonary phthisis—concealing themselves under the mask of intermittent fever. It is a still more remarkable occurrence to see inflammation of the less important organs, such as the ureters excited either by a morbid stimulus, as in gonorrhœa, or by the application of caustic bougies—produce violent attacks of intermittent fever. M. Itard, led by this analogy, examined the state of the brain and its membranes in malignant intermittents, accompanied by cere-

* Mémoire sur quelque Phlegmasies Cérebrales, &c. Par M. Itard, &c.

bral disturbance, such as sopor, delirium, convulsions, cephalalgia, &c., and did certainly discover marks of inflammation. We are more disposed, however, to consider these and other inflammatory appearances, on dissection—as the consequence, rather than as the cause of the disease.

Dr. Bluhm *on the Russian Constitution.**—In the Medical Memoirs, published at St. Petersburgh, Dr. Bluhm has undertaken the now unfashionable investigation of the climate, and constitution of the people of that city. It was in such observations of years and constitutions that the great physicians of former times, from Hippocrates to Sydenham, excelled; but they are now consigned to the popular and unscientific pages of such works as the Monthly Literary Magazines, and considered to be of no moment in medical inquiry. We hope that the profession will come to see their own interest in inquiries similar to that of Dr. Bluhm's, whose labours however, we are sorry to see, have not been very successful.

M. Roux *on Spontaneous Perforations of the Stomach.*†—From the time that M Chaussier called the attention of pathologists to spontaneous perforations of the stomach, many authors, and chiefly MM. Gérard and Laisné, have given remarkable cases in illustration of the occurrence. M. Cruveilhier has also more recently elucidated the subject by dissection, and our countryman Dr. Gairdner, has written a very excellent paper on the subject. M. Roux thinks that such erosions are the operation of a long continued inflammation of the mucous membrane. He distinguishes two stages of the complaint:—one occurring chiefly in children, in which there is a gelatinous softening of the parts affected, and which may be either acute or chronic; the other, occurring in adult age, in which the perforations arise from ulcerative inflammation. The author recommends the warm bath, and opium with mucilage (L'opium gommeux), as the only remedies; but does not say that they have been successful.

Strambio *on the Pathology of the Pellagra.*—In a newly commenced Italian Journal,‡ of which the first number is now before us, the Editor professes himself a disciple of Broussais. Indeed the whole Journal is taken up with a translation of the principles of Broussais in the aphoristic style, and with a disser-

* Vermischte Abhandlungen aus dem Gebiete des Heilkunde. St. Petersburgh, 1821.

† Quelques Considerations sur les Perforations Spontanées de L'Estomac. Par M. X. Roux. 8vo. Paris, 1823.

‡ Annali della Medicina fisiologico-patologica. Compilati da Giovanni Strambio, D.M. Milano, Gennaio, 1824.

tation on pellagra. Our readers are aware that this is a disease peculiar to Italy, and characterized by tubercles chiefly on the body and limbs, sometimes desquamating; great tension of the skin; vertigo; burning, lancinating pain in the head; melancholy, at first remitting, afterwards fixed, and terminating in alienation of mind, which often leads to suicide. The disease usually terminates in diarrhœa, atrophy, and dropsy. The older writers make the disease idiopathic to the skin. M. Jourdan, in the Dictionnaire des Sciences Médicales, first referred it to an inflammation of the internal mucous membranes, making the external symptoms only symptomatic. This doctrine, Dr. Strambio, in reviewing his father's works on the disease,* supports with greater zeal than science; as we do not remark, how much soever he may talk about morbid dissection and its importance, that he has adduced a single fact before unknown; or given a single dissection in support of his pathology. Nothing, indeed, could more strongly demonstrate the low state of medical science in Italy, than this tedious talkative journal of Strambio's.

Dr. PRICHARD'S *Pathology of Paralysis, Epilepsy, and Chorea.*†—The learned author gives several good cases, illustrative of the pathology which deduces paralysis chiefly from affections of the spinal marrow. On dissecting several patients, Dr. Prichard found, as M. Esquirol had done, that the membranes of the spinal canal were strongly injected, indicating the presence of inflammation. In some of the cases effusion had taken place, both in the brain and in the theca vertebralis. The practice which Dr. Prichard recommends as founded on this pathology, consists of blisters and issues along the course of the spine—of course after proper depletion—and internally the oil of turpentine, in doses of one, two, or three drachms a day.

Dr. SACHERO, *of Turin, on the Organic Pulse.*‡—This work is a very elaborate investigation of the different states of the pulse in health and disease, with, what to us at least is a novelty, plates, exhibiting the various elevations of the artery, at the point where it is felt by the finger, all of which varieties of pulse he has distinguished by the old nomenclature, namely, the ce-

* De Pellagra. Cajetani Strambio, M.D. and Dissertazioni di Gaetano Strambio Sulla Pellagra.

† Medical Repository.

‡ De pulsibus organicis diagnosticis et prognosticis, nec non, de eorum insigni utilitate in morborum therapeia derigenda specimen cum iconibus. Auctore H. Sachero, Med. D. pp. 262. 8vo. Augusti Taurinorum, 1823.

phalic, guttural, pectoral, cordal, stomachal, hepatic, splenic, intestinal, ascital, hemorrhoidal, uterine, gravidic, and cutaneal.

IV. MORBID DISSECTIONS.

We have more need than ever, in the present rage for morbid dissection, to caution our young readers not to be drawn away by the influence of fashion from observing symptoms, and noting the effects of remedies; and above all, not to be led by fancy to conclude that every morbid lesion found on dissection has been the *only* cause of such symptoms, if indeed it has been any cause of them at all, and not merely a consequence of the disease. The study of morbid anatomy is highly useful in its proper place; but it is very seductive and dangerous to the young practitioner. Morgagni, and Baillie, and more recently, the French school of Laennec and Broussais, have done much that is useful; but that is no reason why we should neglect the profound observations of Sydenham, Heberden, and J. P. Frank; or try to turn the practice of physic into a mechanical art. As Journalists, we at present stand alone in this, but we will not swerve from what we think to be our duty, for the sake of a brief fit of fashion.

M. Broussais' *Case of Cancer in the Stomach.**—The illustrious founder of the school of Val de Grace, has here given us an interesting case of an officer who had had diarrhœa for six months. His temperament was leuco-phlegmatic; he was pale, thin, and had cold extremities; and the epigastric region was tumefied. A feculent diet did some good, but constipation, abdominal meteorismus, frequent pulse, and hot skin supervened, and he sunk.

"*Dissection.*—On opening the body much water was found, while the stomach, the gastro-hepatic omentum, the pancreas, the commencement of the duodenum, the subjacent cellular tissue, and the vena porta, were united in one mass. The cavity of the stomach filled with black blood, presented towards the pylorus a carcinomatous affection of four inches in diameter, whose ulcerated centre presented a perforation, leading to and entering the vena porta, whence, without doubt, the mass of blood had proceeded."

M. Andral's *Cases of Diaphragmatic Pleuritis.*†—Though the precise point where an inflammation exists is not so practically important as the ascertaining of the inflammation itself;

* Sur un Cancer de l'Estomac avec perforation de la veine porte. Par M. Casimir Broussais.

† Archives Générales de Médecine. Oct.

yet, for the sake of precision, when it can be done it ought. M. Andral, jun., a zealous partizan of the anatomical theory of diseases, here gives us several cases of this disease both simple and complicated. We shall content ourselves with his two simple cases.

1st Case.—A man, aged 26, was seized with febrile symptoms, oppression, and pain in the left hypochondrium, with some hiccup, dyspnœa, and frequent cough. The hypochondrium was tender to the touch. He died on the sixth day, evidently by the sheer neglect of the physician, who only prescribed venesection to twelve ounces and twenty leeches to the hypochondrium.

"*Dissection.*—The pleura of the diaphragm on the left side and that covering the basis of the left lung opposite to it, showed strong appearances of inflammation, being fully injected with blood and covered with a mass of albuminous exudation, which filled up the space between the lung and the diaphragm. This, therefore, was the seat of the disease, as both the substance of the lungs and diaphragm, and also the other parts of the pleura were healthy. No morbid appearance occurred in the heart, brain, or abdomen."

2d Case.—A man, aged 31, a tailor, was seized after exposure to wet, with acute pain at the pit of the stomach; and after some days it extended towards the right hypochondrium, became tender on pressure, and was accompanied with cough, dyspnœa, nausea, vomiting, and hiccup. As in the former case, a trifling quantity of blood was taken by the lancet and leeches, and, *of course*, the patient died.

"*Dissection.*—As in the former case, between the diaphragmatic and pneumonic portions of the pleura, there was a considerable exudation of sero-purulent matter, which was confined by membranous adhesions between the lungs and diaphragm. This effusion was so great as to displace both the liver and the right lung. All the other parts of the pleura were sound, as were the heart and the viscera of the abdomen. The arachnoid membrane, however, was injected, and the lungs were studded with miliary granulations."

M. Gaugiran's *Case of Cerebral Fungus.**—This is a very valuable and instructive case for teaching caution. A man, aged 24, was seized all at once with giddiness and sense of oppression, and tightness about the chest, followed some days after by vomiting, but no pain in the head, or other cerebral affection besides the vertigo, till the day of his death, when an excruciating pain in the occiput commenced and continued till he expired.

"*Dissection.*—The body was opened in presence of MM. Delpech, Gaugiran, and Naudin. In the brain were found five fungous vegeta-

* Journal Générale de Médecine.

tions, springing from the superior part of the dura mater, and they had even worn fossæ in the opposite parietal bone. The dura mater adhered morbidly to the arachnoid on the upper and anterior part of both hemispheres. On the superior part of the falciform process, there were signs of an incipient ossification. In the left lateral ventricle were found six or seven ounces of serum; and in the right four or five. The vessels and sinuses of the brain were highly inflamed, as were a few points of the stomach. The liver was gorged with blood."

V. SURGERY.

MACILWAIN'S *Treatise on Strictures.**—A complete work like this was much wanted to condense into one volume the multiform doctrines and practice of the various writers on strictures; all of whom only detail their own views and pass by others as quite worthless. The author, however, is far from being a mere compiler; he reasons well, and is often original.

New Operation for Cataract. By JOHN BOWEN, M.D.†—The author of this work discards at one sweep the various distinctions of Cataract into soft, hard, &c. and all the various modes of couching, extraction, and breaking down. He depends solely on his favourite operation of Hyalonyxis, which he has performed, he says, no less than 160 times with unexampled success, the proportion of failures being about one in thirty, and no secondary cataract or even inflammation so as to require the lancet. This is certainly an improvement of no common magnitude, if it prove as successful in the hands of others as it has done with Dr. Bowen.

LISFRANC'S *New Diagnosis of Fractures.*‡—This celebrated surgeon, already well known to our readers, has here furnished us with a very useful method of distinguishing fractures with infinitely less pain to the patient than any of the old methods furnish. It is, in a word, the application of Laennec's stethoscope to such cases; an instrument, which, to the great loss of hundreds of patients, is scarcely known in England more than by name. We shall soon take an opportunity of calling attention to its great utility in the diagnosis of pectoral complaints;

* A Treatise on Stricture of the Urethra; designed as a Manual for the Treatment of that Complaint, and addressed chiefly to Junior Practitioners. By George Macilvain, M.R.C. Surgeon to the Finsbury Dispensary, &c. pp. 138, 8vo. London—Anderson, 1824.

† Practical Observations on the removal of every Species and Variety of Cataract, by Hyalonyxis or the Vitreous Operation, &c. By John Bowen, M.D. pp. 120, 8vo. with a plate. London, Callow, 1824.

‡ Mémoire sur de Nouvelles Applications du Stéthoscope de M. le Professeur Laennec. Par J. Lisfranc, pp. 30, 8vo. Paris, 1823.

in the mean time we shall give a specimen of Lisfranc's new application of it.

"The experiments which I have made upon the dead body, and afterwards repeated upon the living subject, both in my private practice and at the "Bureau Central," do not permit me to hesitate in laying down the principle, that there can be no more a doubtful fracture, excepting some solutions of continuity of the bones of the cranium. In fact, by the assistance of the stethoscope the tumefaction is never sufficiently considerable to conceal the crepitation, and the slightest movements are sufficient to render it perceptible. Our patients will, therefore, no longer be exposed to those errors, so dangerous in the diagnosis of fractures; and we shall have the satisfaction of preventing those violent pains, which are the inevitable consequence of the present mode of investigation.

"*General Rules for the application of the Stethoscope.*

1. When the stethoscope is applied upon a fracture, it is almost indifferent whether the mouth-piece be left in it or not; but in proportion as we recede from it the crepitation becomes more sensible, if the instrument be deprived of the mouth-piece.

2. The more superficial the bones are, the more the crepitation is distinct, and as the slightest movements are sufficient to produce it, it is the most sensible upon the fracture. Thus we not only determine the fact of the fracture, but also its precise seat. It would be useless to remark how much we thus avoid those painful examinations, and how important it is in practice to know the precise situation of the solution of continuity in the bone. To discover this situation with accuracy, it is indispensable that the movements impressed upon the fragments should be always the same.

3. The crepitation is less appreciable in proportion as we recede from the fractured point, but it is heard at almost inconceivable distances; in that case, however, it must be rather strong.

4. When a fracture exists with crossing of the part (chevauchement), the crepitation is less easy to be distinguished; but if an unexercised ear do not perceive it very easily, it may be rendered much more distinct by practising slight extension and counter extension.

5. The crepitation occasioned by fragments of compact bones produces an acute sound, with loud crackling (des forts petillemens), perceived by the stethoscope they are often loud, and sometimes considerably offend the ear.

6. The crepitation of fragments of spongy bones is obtuse (sourde), and is similar to the action of a file upon a hard and porous body (the pumice stone for instance), the noise, from time to time, is intermixed with rather stronger sounds, which have a certain analogy with the crepitation of compact bones.

7. The crepitation of oblique fractures is stronger than that of transverse fractures.

8. If a liquid be effused round the fragments, there is joined to the crepitation a noise, similar to that which the foot produces in a bad shoe containing water.

9. When the fracture is complicated with splinters, there is heard, besides the ordinary crepitation, a sort of crackling, similar to that which many hard and angular bodies would produce when rubbed against each other.

10. When the fracture is accompanied by wounds of the soft parts, to the crepitation are joined sounds similar to those produced by strong inspirations and expirations, when the mouth is widely open.

11. Luxations cannot be confounded with fractures, for the sensation produced by the displaced articular surfaces is slight, and hardly extends beyond the situation of displacement: it is obtuse, like that of two polished and humid surfaces moved upon each other.

12. The movement of tendons in their sheaths produces sounds, full, obtuse, jerking, rather thin (rares), and extremely different from crepitation.

We shall not terminate these generalities without recommending even to those who are accustomed to the use of the stethoscope, to occasionally exercise themselves to the sound of crepitation upon the dead body; for if we judge by ourselves, and MM. Ricard, Zieglar, Michel, Van Mons, Accarie, and Gosteat, who have assisted us in our researches, our first essays furnished us but very obscure sensations.

"*Fractures of the Tibia.*—The pathologists agree that fractures of the tibia are often very difficult to appreciate, particularly when the patient has been able to walk; the pain, which continues beyond the usual time, *the impalement* which takes place upon some joint of the bone, the shocks which the patient experiences during sleep, are but equivocal signs; often the tumefaction prevents the osseous inequalities from being discovered, which indeed sometimes do not exist at all. The same may be said of the mobility of the fragments; if the crepitation takes place it is obscure, particularly to ordinary practitioners. Let the stethoscope be applied, and impress the slightest movements upon the fragments, and every difficulty disappears. Crepitation, although but little sensible at the posterior part of the leg, is heard along the whole length of the thigh, on the crista iliaca, on the sacrum, and half up the spine: but it is more distinct as we approach the fractured part. If the instrument be placed upon the point of the fibula, diametrically opposed to the fracture, the noise of the crepitation is less than in the whole extent of the tibia, it is less by one half than upon the fracture itself.

Fractures of the Fibula—Inferior third.—When the tumefaction is considerable, the luxation of the foot within is the only sign which allows us to presume the fracture of the fibula; I say presume, since even though after the reduction, the foot should enjoy a great mobility, and should be dislocated spontaneously, one would not have the proof of the existence of a fracture, since the rupture of the ligaments might permit of this extraordinary mobility, and yet nothing is more common than to see a simple luxation of the foot reproduce itself spontaneously. If it be objected that it is perfectly indifferent to establish the diagnostic of a fracture, during tumefaction, we would reply, 1. That in pathology it is best to determine a disease upon the spot. 2. That the inflammatory and œdematous swelling disappears by reduction. At all events, it will be admitted that it is extremely rare to obtain

a crepitation in the present case. If slight pressure be exercised along the course of the fragments, and recourse is had to the stethoscope, the crepitation is extremely distinct upon the seat of the fracture, it is less upon the middle part of the bone than upon its head, because of the presence of the muscles, which cover the body of the fibula; for the same reason, it is more appreciable upon the crista iliaca than upon the thigh. When the instrument is applied upon the point of the tibia, corresponding to the fracture of the fibula, a distant crepitation is heard, and when it is placed upon the tibia, higher or lower than the fracture of the fibula, a very obscure sensation is obtained.

"*Middle Part.*—At this height the fracture is more difficult to distinguish, since the bone is more deeply seated and the displacement is less; after having advised the impression of movements on the fragments, authors add, that a mistake may be committed: it may be always avoided by the stethoscope; the crepitation will be better appreciated upon the fracture than upon the head of the fibula, or upon the head of the external malleolus.

"*Fractures of the Leg.*—Sensations from multiplied surfaces rubbing against each other, sound equally sensible within and without the leg, and are perceived, very distinctly, as high as the middle of the vertebral column, but diminishing in proportion as we recede from the fracture. It is evident, after the facts we have just established, that the fracture of the fibula may be easily distinguished from that of the tibia, and the fracture of the leg from that of each of these bones in particular.

"*Longitudinal Fracture of the Patella.*—This is so difficult to determine, that authors have almost omitted to mention its signs. The slight separation of fragments, of which Lamotte speaks, is impossible to distinguish if there be any tumefaction. It is also very difficult to impress movements sufficient to appreciate the crepitation and unusual movement of the parts of a broken bone—all these researches are also dangerous, from the development of inflammation which might occur. The stethoscope removes, in an instant, all doubt; the slightest movements suffice to produce a sensation of creeping (fourmillement), most sensible on the fractured part, and perceptible, after the rules established, up to the crista iliaca.

"*Transverse and Oblique Fracture of the Patella.*—1. A prudent surgeon will never permit the patient to walk in order to determine this fracture, for it would produce the serious inconvenience of tearing the aponeurotic and fibrous layer, if it had resisted the fracturing cause, or the action of the muscles.—2. The commemorative signs can never serve as the basis of a sure diagnosis.—3. We proscribe, from the above reasons, all movement or flexion of the wounded leg.—4. When the swelling of the soft parts exists, the interval established between the fragments is no longer perceptible, although it be considerable.—5. To hear or feel the crepitation, much pain would be occasioned, the bones would be moved considerably, which not only would renew the inflammation, but fresh tearing would be produced.—By the stethoscope all these dangers will be avoided; the slightest motion produces, distinctly, the ordinary crepitation of spongy bones.

The limb ought always to be placed in a state of extension, and when there is a considerable separation of the fractured portions, their contiguity ought to be effected.—Do not let us omit to say, that in fractures of the patella, there is joined to the crepitation the sensation produced by the rubbing together of articular surfaces.

"*Fractures of the Femur.*—For the most part, this accident is easily distinguishable; but to determine it by the ordinary means, much more pain is occasioned than by employing the cylinder. Applied upon the fracture, it is always better heard there than elsewhere. It is sensible in the whole extent of the limb, upon the crista iliaca, upon the abdomen, upon the spine, and even upon the sinciput; it may be perceived upon the thorax, while to the sound of respiration are added, deep, obtuse, distant sounds, similar to those heard at a distance from a deep cavern.

"*Fractures of the Neck of the Femur.*—In a great number of cases the diagnosis of this fracture is so difficult to establish, that, although we have the luminous description of it by MM. Boyer and Richerand, there is no disease, I believe, which has so often occasioned mistakes. The shortening of the limb, indeed, and the ascent of the great trochanter do not always exist, or are so slight as to be very difficult to determine. To arrive at the diagnosis more easily, we have long since advised the admeasurement of the respective lengths of the lower extremities by a string, which should extend from the anterior superior spinous process of the ilium to the external malleolus.—There are subjects in whom the member has become elongated by imprudent measures, then the oblique fragments form an arch (arc boutent) against each other, or the paralysed muscles allow themselves to be distended, again opening a new source of errors; for, in the first case, it may become very difficult to give to the thigh its ordinary length, or to produce its shortening. The rotation of the foot without is not constant. (*Pare, J. L. Petit, & Desault.*) The power of rendering to the limb its usual length and rectitude, by slight efforts of extension, is a sign which does not always exist.—The small extent of the circle described by the trochanter major, requires extremely painful movements of rotation, and the trifling length of the neck of the femur may easily impose upon us. The impossibility of bending the thigh upon the pelvis, when the leg is extended, is a symptom which may also produce the contúsion of the articulation.—In the Memoirs of the Academy of Surgery the history of a case is given, in which the patient arose and walked to his lodging after the neck of the femur had been fractured. MM. Desault and Laennec have made similar observations. A great number of facts, collected by Louis, Duverney, and Sabatier, prove that the displacement of the fragments does not always take place immediately after the accident. It is not, therefore, surprising, that the greatest surgeons often hesitate in giving their opinion, even after having observed the case during several days. Every doubt vanishes on the application of the instrument invented by M. Laennec. If the slightest movement be given to the limb, the crepitation is perceived; it is as distinct upon the anterior part of the crista iliaca as upon the articulation itself: it is heard remarkably upon the patella, and in the whole length of the leg.—The separation

of the epiphysis from the head of the femur, and the depression of the cotyloid cavity, observed by Ludwig, ought to furnish a particular sound; I have no datum upon these facts, but merely mention them to excite the attention of practitioners.

"*Fractures of the Pelvis.*—I have long since observed, that the most certain means of discovering fractures of the pelvis is, by introducing the finger into the rectum or vagina; nevertheless, some of these fractures are very doubtful. Whenever the fragments have a slight mobility, the stethoscope will discover the solution of continuity and its seat.

"*Fractures of the Radius.*—This fracture is not difficult to distinguish at some distance from the wrist; nevertheless, to determine it satisfactorily, it is often necessary to give multiplied, painful, and even dangerous movements to the bone. When, however, it occurs very near the inferior extremity of the radius, it is agreed that its diagnostic is obscure; it becomes more so from the slight projection occasioned by the superior portion of the broken bone upon the dorsal or palmar surface of the fore-arm: the solution of continuity of the bone may then be confounded with the luxation of the wrist, for the pain often prevents the movements of the hand, and even should they be executed, the swelling would render them incomplete, and would not permit us easily to perceive if the styloid process was moveable or not.—The stethoscope has here, also, the advantage of determining the slightest crepitation: it is most sensible upon the fractured spot. If the cylinder be placed upon the ulna, directly opposite to the fractured point of the radius, the sound is less than on any part of the radius. The crepitation may be heard upon the humerus. If the radius only be moved, when fractured, the crepitation is heard; but if, afterwards, the ulna alone be thrown into action, supposing no fracture of it, no crepitation is heard. This rule applies to the tibia and fibula: nothing, therefore, is easier than to determine a fracture of one of these bones.

"*Fractures of the Fore-arm.*—The stethoscope will here again preserve the patient from the violent pains which the ordinary means of investigation often occasion. The crepitation is most distinct upon the fractured place; as distinct on the outer as the inner side of the member; it may be heard as high as the superior part of the sternum, even upon the head. Like the leg, the crepitation occasions the sensation of multiplied surfaces rubbing against each other. The fracture of the fore-arm is easier to distinguish than that of the radius or ulna, separately."

M. Delpech's *Excision of a large Tumour.*—This case has been much talked of, and is certainly a remarkable one.—A baker of Perpignan had some preputial excoriations which were considered to be chancres, but they did not yield to mercury, and he enlisted in the *gendarmerie* on the confines of Spain. Riding produced engorgement of the prepuce, which at length ensheathed the whole penis and scrotum. In six years the tumour had advanced till it hung down below his knee.

"The patient was admitted into the chirurgico-clinical department of Montpellier, where Professor Delpech recognised in the tumour the characters of elephantiasis; and having determined that the testicles and the penis were sound, and that there were no other symptoms of the same affection, he conceived the following plan of operation:—1. To make two semicircular flaps with the sound skin on the two sides of the neck of the tumour, each one commencing at the corresponding inguinal ring, and ending before the anus.—2. In the interval of these two flaps to form a third with the sound skin of the anterior portion of the neck of the tumour. 3. To uncover, right and left, the testicular cords; to ascertain if there was any hernia; to follow then the course of the cords in the tumour down to the testicles; to isolate these last with their cords, and to place them upon the abdomen.—4. To slit open from below up, the swollen sheath as far as the glans; then to dissect and denude the penis, and to place it on the abdomen.—5. To take away all the tumour in dissecting the perineum. The operation was accomplished and lasted fifty minutes, and the tumour weighed sixty pounds. The testicles were enveloped in the two lateral flaps, which went to form a new scrotum. The penis was enclosed in the middle flap which formed a new sheath. In six weeks after every thing was cicatrized. The only inconveniences which followed the operation were a deep-seated spasm, relieved by two doses of opium the same day of the operation, and a slight fever the five following days. A small part of the anterior flap perished by gangrene, so that the penis has no prepuce. The scrotum is well formed, and the testicles move freely within it. Professor Delpech was under the necessity of digging down eight or ten inches through the immense mass of fat which formed the tumour, before he discovered any vestige either of cord or testicle. This was the occasion of considerable detention in the progress of the operation."

M. Beclard's *Extirpation of the Parotid Gland.*—This formidable operation, thought by several eminent surgeons to be impossible, was performed by M. Beclard, with what we may call partial success.

"L. F. Clout, a paper-stainer, was admitted into the Hospital La Pitié, on the 19th of August, 1823, on account of a schirrous ulceration of the parotid gland. This man was aged forty-seven years, of an apparently good constitution, and of a sanguineo-nervous temperament. The disease had commenced eight years before; but, from being long indolent, and comparatively small, it had rapidly increased, and became the seat of lancinating pains: it had lost also its mobility. On admission into the hospital, this cancerous tumour possessed a very considerable elevation. At its superior margin it raised the lobe, and appeared to involve the cartilaginous portions of the auditory canal. It extended downwards more than an inch from the angle of the jaw; backwards it adhered to the sterno-mastoid muscle, and its anterior portion covered a great portion of the masseter. It was ulcerated in two situations, and had but little motion. There was no appearance of cancerous cachexia. The patient de-

sired an operation, and M. Beclard performed it in the following manner:—

"This patient having been placed on his side, the tumour was inclosed by two curved incisions, the one made at the anterior and posterior part, the other at the anterior and superior part of its circumference. That part of the tumour placed over the masseter was first dissected off, from before backwards, with sufficient ease. It was next attempted to detach it from below upwards; but a projection of its substance plunged deeply behind and beneath the internal pterigoid. To endeavour to remove this portion of the schirrus at the commencement, with the rest of the tumour, would be to expose the operator to the risk of hemorrhage, which might be difficult to repress during the operation; M. Beclard therefore decided to dissect upwards, by striking the bistoury into the structure of the tumour itself, on a level with the projections, whilst the instrument divided before and behind the cellular tissue, connecting it to the adjoining parts. Half the inferior circumference of the cartilage, contributing to form the auditory canal, which was enveloped in the diseased part of the parotid adjoining, was removed with it in this first dissection. Numerous arteries were tied at this stage of the operation; and M. Beclard continued the extirpation of the rest of the tumour. A portion of the anterior margin and internal surface of the sterno-mastoid, being converted into schirrous substance, was excised with the bistoury. The projection situated behind the jaw was removed in successive slices: nearly the whole schirrous mass was already dissected away in this manner, when a large jet of arterial blood announced the lesion of the external carotid, or the division of one of its principal branches. M. Beclard placed the fore-finger of his left hand on the place whence the hemorrhage proceeded, seized the bleeding vessel with his forceps, and passed a needle with a double ligature around it; an assistant tied the vessel above and below the wound in it, which was lateral. The artery was held forward and outwards, whilst he completed the operation of that part of the tumour which remained in the pit, formed by the ramus of the jaw. One small projection of the tumour, placed before the cervical vertebræ, was only left. On account of its proximity to the internal jugular vein, M. Beclard contented himself with passing two ligatures beneath this part, by means of a needle, and with tying the one at its superior, the other at its inferior extremity.

"The considerable wound which remained after this operation, presented, in its anterior part, the masseter as if dissected, and the labial artery denuded, but not divided; at its posterior part, the mastoid apophysis, and the sterno-mastoid, with its interior and anterior portion removed; internally, the styloid apophysis, the external carotid surrounded with two ligatures, the stylo-hyoide muscle, and the digastric; and the small portion of the tumour which was tied, formed the bottom of the wound, which opened upwards into the meatus auditorius externus. The wound was dressed forthwith.

"The extirpated tumour presented schirrous texture, mixed with a small portion of tuberculous matter. It was impossible to distinguish the structure proper to the gland itself.

"No particular occurrence took place during the first days of the treatment. All the right side of the face remained a stranger to any sort of expression, except what was occasioned by the action of the left side, producing some degree of motion in the soft parts of the right. The right eye remained continually open, which, owing to the irritation and dryness of the conjunctiva thus occasioned, gave rise to slight but obstinate ophthalmia. At the period of suppuration of the wound, the patient experienced deafness of the same side, owing either to inflammation having been propagated to the internal membrane of the ear, or to the quantity of the discharge, and swelling of the adjoining parts. The suppuration was going on kindly, and healthy granulations covered the wound, when, on the twelfth day, the patient experienced rigours, followed by heat and fever. Phlegmonous erysipelas attacked the surrounding parts, and was followed with great delirium. General and local bleedings, during the three following days, caused but slight amendment. After this period the erysipelas on the face terminated by desquamation; but an abscess formed deep below the right trapezius muscle. The pulse remained frequent, and the derangement of the mental faculties continued. For several days, the discharge was excessive. A counter-opening was made, and graduated compression was applied; which occasioned adhesion of the parietes of the abscess, the ligature placed on the external carotid, and that part of the tumour which was tied, came away. The wound was approaching to entire cicatrization, the fever subsided, and the strength and appetite returned: but to the preceding delirium succeeded taciturnity, which was only broken by paroxysms of rage; mental alienation had supervened to the febrile delirium.

"Three months after the operation, the wound was closed, unless near the ear, where it had assumed a character denoting a return of the cancer. The patient was still maniacal, and seemed affected with a chronic inflammation of the membranes of the brain. He died three months and three weeks after the operation.

"*Dissection.*—The external carotid artery was observed to terminate in cellular tissue, resulting from the cicatrization of the wound. There appeared no vestige of the parotid. The internal jugular vein was obliterated at the same height, and seemed to commence anew lower down, by communicating with the superficial branches. The corresponding lateral sinus was not obliterated. Some pus was found in the meatus auditorius externus. The membrane of the tympanum was sound. There was a marked injection of the pia mater, and of the choroid, which was redder than the choroid plexus. A serosity was found in the ventricles, suspending particles similar to those deposited by some red wines."*

M. Weinhold's *Extirpation of the Parotid.*—This is another testimony in favour of this formidable operation. M. Weinhold says he has removed the parotid in three dfferent cases with success. There are three stages, he says, of schir-

* Med. Rep.

rosity in the gland; the first that of induration; the second confirmed schirrus; and the third open cancer.—In the first stage the gland may be extirpated by the scalpel; in the second, it is better to use ligatures and caustic; in the third no remedy has been hitherto found. The great danger in the operation for extirpating, is wounding the carotid artery, or dividing the par vagum, either of which, would in all probability prove fatal.

Dr. ARCHER's *Case of Femoral Aneurism, cured by the Spontaneous Rupture of the Sac.**—We think this a very interesting case. The patient—an Italian raree-show man, aged 61, who had led a very irregular life, though still vigorous, was attacked with jaundice, and at the same time with pain and weakness in the left leg. The jaundice yielded to the usual treatment; but it was found that a true femoral aneurism had formed, which rather increased than diminished, under pressure and cold applications. The operation was deemed inadvisable at first, but as his health appeared to be sinking, it was at last resolved on. On the day fixed for the operation,

"The patient experienced an instantaneous and violent pain in the knee, attended with considerable noise proceeding from the rupture of the tumour. An immediate distention of the whole limb ensued, accompanied with an extensive ecchymosis from the glutei muscles inclusively, down to the knee, giving it a dark livid colour; the tumour had entirely disappeared.—The patient was much debilitated by the extravasation of blood, and complained very considerably of tension of the thigh; his pulse very feeble and his spirits depressed. A compress and bandage were applied tolerably tight over the seat of the former tumour, and the limb bathed with tincture of camphor. This treatment was continued for several days; on the third day the sugillation appeared to be diminished, and the thigh was evidently smaller. The patient's health was improving; and finally, on the 20th day after the rupture, the swelling and ecchymosis had so far subsided, as to permit him to walk about the room, and in a month more, he was enabled to follow his usual avocation."

Dr. Archer thinks that obliteration of the artery might have taken place from a coagulum, and in consequence of low living from the indigence of the patient.

M. EASTNER's *Case of Popliteal Aneurism.*†—In Transactions of the Royal Medical Society of Copenhagen, already alluded to, we have an account, by M. Eastner, of a successful operation, which was performed just above the point where the pulsations of the crural artery disappeared from the touch, when examined in the groin. The vessel was found and exposed in this place immediately upon the first incision, an advantage not without its value. Two ligatures were employed;

* American Medical Recorder.
† Acta Regiæ Societatis Medicæ Hafniensis.

but in place of dividing the artery between them, the limb was simply laid so as to relax the parts to the utmost, and this was thought to have answered equally well. After three months, the tumour not having diminished in size, and yet being without pulsation, was opened and evacuated. Considerable oozing of blood from the whole surface followed, which was stopped with lint, and in seven weeks the wound healed.

M. Pipelet *on Acupuncturation in Convulsive Diseases.**—The multiplied experiments lately made with this agent, all tend to establish its great power over many disorders. We think the present is no less important an application of it than has yet been attempted. M. Pipelet has tried the needles to great extent, particularly in the case of a man who had convulsions of the muscles of the abdomen, diaphragm, thorax, neck, and head, in consequence of a fall, in which the ensiform cartilage had been pushed inwards. He had intense pain beneath the last false rib on both sides. On applying the needles all the convulsions ceased, except those of the neck, which could not by any means be subdued. Sometimes the needles were allowed to remain, with advantage, for four days at once. They are now, at the patient's request, repeated every ten or fifteen days.

Mr. Syme's *Amputation of the Hip-joint.*†

Sir Astley Cooper's *Amputation of the Hip-joint.*—No official account of this interesting case has yet been published. The patient is understood to be about 40, and had had his limb amputated before above the knee-joint. The operation was performed on the 16th January, and occupied 35 minutes:—four ligatures only were employed, and very little blood was lost. He is now (March 25th) considered to be out of danger.

VI. PRACTICE OF PHYSIC.

The publications in this department are chiefly directed to the effects of what are called the New French remedies, namely, Iodine, Sulphate of Quinine, Acetate of Morphine, &c., concerning which the testimonies are, of course, various, in consequence of the different genius of the experimenters as to observation, fancy, or prejudice, and the different constitutions and affections of the patients. It has always been thus, and, from the nature of things, it must always be thus, and the practice of medicine must always be proportionably uncertain and empirical.

* Journal Complémentaire.
† See No. 14 of the American Journal of Foreign Medicine, p. 270.

Dr. GAIRDNER *on Iodine.**—The author, we perceive, in the well written Essay before us, is an advocate for this medicine, with which he has been successful in a considerable number of cases. We learn, however, that it has turned out very differently when prescribed, in similar cases, by others. May not this, in some instances, have arisen from the following shameful circumstance?

"I have," says Dr. Gairdner, "sent prescriptions for the hydriodate of potass to several chemists in London, and my prescriptions were said to have been made up; but, in a few days afterwards, when I called at their shops, in order to examine the medicine, I discovered that they were not even aware of the existence of such a drug."

If such is the practice of druggists, and we fear it is but too much so, we cannot depend on any medicine which we ourselves have not seen made up.

ZIMMERMAN *on the Erysipelas of Infants.*†—The author gives one successful case of this singular disorder, and expresses his belief that the induration of the cellular tissue and erysipelas in infants are identical, as they are described by M. Andry, and also under the name of *skin-bound*, by Denman, Underwood, and Henche.—For a more detailed account, we refer to our Review of Schmidt's Disquisitions. *Quart. Jour.* No. XVI.

M. CHOULANT'S *Tabular Views of Medicine.*‡—We highly approve of the plan of this work: it is divided into twelve tables, exhibiting at a glance the history and chronology of the several branches of the medical sciences, according to the order of precedence in theory and practice, from the earliest times up to the beginning of the present century.

Mercury in Syphilis.—The controversy respecting mercury in this disease, is still keenly canvassed. We have now before us two advocates for the mercurial plan, one foreign§ and one British.‖ Although we confess that much may be said on both sides; yet, we think, if the circumstances pointed out in

* Essay on the Effects of Iodine on the Human Constitution, with Practical Observations on its Use in the Cure of Bronchocele, Scrofula, &c. By W. Gairdner, M.D. p. 64. 8vo. Lond. 1824.

† Einige Bemerkungen über Zellgewebeverhartung und Rose der Neugebohrenen, nebst Beobactung eines glüklic abgelaufenen Falles derselben. Von K. G. Zimmerman.

‡ Tafeln zur Geschichte der Medizin, &c. Von L. Choulant, D.M. Fol. Leipzig, 1822.

§ Archives fur Medizin. Erfrahung. for May, 1823.

‖ A Treatise on Syphilis, exhibiting the advantages of large doses of Submuriate of Mercury, in the cure of that disease; also, an Inquiry into the Modus Operandi of Mercury, illustrated by experiments. By James Boyle, Esq. &c. &c. 8vo. pp. 166. London, 1824.

our review of Lagneau on Chancres, (*Quart. Jour.* No. XVI.) were attended to with care, there would be less dispute about the employment and the efficacy of mercury. Mr. Boyle advises very large doses of calomel, as the most effectual mode of subduing the venereal virus. M. Simon recommends profuse salivation.

Daniell *on Charcoal in Constipation.**—Dr. Daniell, of Savannah, has exhibited large doses of charcoal, with success, in obstinate cases of constipation. The charcoal, he says, unites intimately with the slime of the bowels, forming balls from half an inch to three inches in diameter, and which often require the most active cathartics to expel them. He prescribed the charcoal in a case which he relates, in the dose of two table-spoonfuls every half hour, with enemata and other purgatives. From his description of the *modus operandi*, we should not, even in a bad case, be inclined to employ such quantities of charcoal.

Dr. Chisholm *on Constipation.*†—In a bad case of constipation, which refused to yield to the usual remedies of purgatives, enemata, blood-letting, warm baths, &c., the author suspecting introsusceptio, had a strong solution of common yellow soap prepared; of which "more than a large wash-hand basinful was gradually, but perseveringly thrown up by means of Read's injecting machine, and retained by applying napkins to the anus as long as the patient could bear the distention." This had the desired effect of bringing away some stercoraceous matter, and in three days the patient was well. We think this important, as fatal cases of the same kind are occurring every day. Every practitioner ought to possess this useful machine, the expense of which is only about fifty shillings or three pounds.

M. Westburgh *on Tobacco in Ischuria.*—This is not altogether a new remedy, though the way in which the author exhibits it is rather novel. He gives the tincture in the dose of twenty drops every hour in a glass of linseed tea. The second or third dose is usually successful. In cases of gonorrhœa, also, where the water is made slowly and *guttatim*, he has employed the same remedy with advantage.

M. Magendie's *Case of Hydrophobic Affection, treated by Injection of Water into the Veins.*‡—The following case, which has been much talked about, we give entire and without comment.

* Chapman's Journal. † Repository.
‡ Journal de Physiologie, October, 1823.

"About noon on the 15th of October, I was requested by M. Caillard, resident physician at the Hotel-Dieu, to come immediately to that Hospital to give my opinion relative to a man in the last stage of hydrophobia. I reached it about one. Several students whom I met, told me that if I wished to see the patient alive, I had not a moment to lose. The man had already been placed in a detached room; he had on a strait waistcoat, and was agitated with most furious motions: approaching the bed, I recognised all the characters of rabies; the eye threatening but not injected; exclamations; most violent efforts to liberate himself from restraint; change of voice; thickened saliva; and attempts to bite objects presented him, alternating with intervals of repose. In these moments of short duration, he understood the reasoning and consolation addressed to him, but soon relapsed into fury. The sight of liquids, or a mirror, excited extreme agitation. In the morning he had swallowed a few mouthfuls of fluids, but when I saw him, a spoonful of water poured between his lips, produced frightful convulsions of the muscle of the pharynx, and was violently spit out over the assistants.—Noise, or merely touching his hair with the finger, excited convulsions of incredible intensity. His body was alternately bent and extended with inconceivable force. The pulse was upwards of 150 in a minute, and respiration interrupted. From this combination of symptoms, I could not fail to recognise hydrophobia, and the near approach of death.

"I asked if the man had been bitten, but found that his friends knew nothing on the subject. He had been despondent for some time, his strength not permitting him to continue his work as a baker; his sadness had increased after having received a letter from a woman he loved; a fortnight past he had sought relief in drinking for several days; the consequence was copious bleeding from the nose; a physician was called in, suspecting cerebral congestion, he ordered thirty leeches, and three bleedings from the arm. Notwithstanding this treatment, he had been seized with several attacks of fury, in which he threatened those about him, and drank with difficulty. His relations seeing him grow worse, and no longer able to restrain him, brought him in the night to the Hotel-Dieu. The patient had there been copiously bleed from the foot without any diminution of the attacks, which became more forcible and more frequent.

[Here M. Magendie states that he had intended to inoculate a dog with the saliva from the patient, but that he was not able to procure a sufficient quantity.]

"The case being urgent, and bearing in mind the results of the experiments related in the first Volume of this Journal, in which I had seen the symptoms of rabies cease in dogs after the injection of tepid water into the veins, I resolved on trying this extreme measure.

"I procured a small hydrocele syringe in bad condition, and some water heated to 30° Reaumur. I exposed the patient's right arm by an incision in the straight waistcoat. I was struck by remarking several small wounds on the index finger, and another much larger placed over the second metacarpal bone, and apparently the result of a recent cauterization. The patient was unable to answer any question, and his friends not having any information on the subject, I set

about exposing a superficial vein in the fore-arm, an operation rendered difficult by the constant motion of the patient. With the help, however, of five or six strong students, I passed two flat ligatures under the vessel, and made an opening in it large enough to admit the point of the syringe. It was now a quarter after one; I injected at nine times, water heated to thirty degrees, to the amount of about two pounds. On account of the bad state of the instrument, I calculate that about a dozen bubbles of air may have entered with the water.

"At each time that I injected a syringeful, I examined the patient, but he presented nothing particular, continuing to vociferate, to talk of his inevitable death, &c.; and I only stopped because I thought I had introduced a sufficient quantity of water to produce a sensible effect. The injection was finished at forty minutes after one: I tied the vein above and below the opening. Already, an unlooked for calm began to show itself; the pulse from 150, fell to 120, was soon 100, and within twenty minutes was 80. All the urgent and violent symptoms disappeared with a promptitude which astonished the assistants; for myself at this moment I experienced the most lively satisfaction I have ever felt.

"The patient recovered the use of his senses and understanding; a calm succeeded to his fury, his eyes resumed their natural expression, the convulsive motions ceased, and strange to say, he drank a glass of fluid without any difficulty. M. Caillard caused the strait waistcoat to be removed, and the patient begged to be allowed to go down into the court in order to make water. For half an hour this request was supposed to be the result of delirium, but he repeated it so often and so pressingly, that M. Caillard consented, and was surprised to find the patient walk quietly, supported by the students, to the door. Seeing that his desire was real, he was told that it would be better to make water in a corner of the room, which he did, and in a few minutes passed about a pound of turbid, yellowish urine, so fœtid, that it was necessary to remove it immediately.

"From this time, which happened an hour and a half after the injection, the patient inquired for his friends, saw them, spoke of his affairs, gained courage and confidence.

"His state was remarkable, and not like any thing known: he was without fever, his pulse not above 80; but all the motions of the system of organic life, as the contractions of the heart, respiration, speech, &c., were performed with a rapid trembling. When any muscle was touched, it was felt to be agitated with the same trembling; in short, the morbid phenomena presented by the patient were as uncommon as his position was new.

"In the evening of the 17th, he received the consolations of religion. Whether the impression thus made was too powerful, or from some other cause, hemorrhage from the intestines took place in the night; the blood was coagulated, apparently arterial, and was mixed with portions of solid fæces. This accident was followed by a little pain in the abdomen, which was relieved by fomentations and emollient injection.

"The improvement continued without interruption until the fifth

day, when the patient complained of severe pains in the wrists, elbows, and knees. I at first thought them the results of his struggles during the fits; but in spite of emollients they became so violent, that it was with difficulty he could support the weight of the bed clothes. The left knee in particular was swelled, as were the wrist and elbow of the same side. On the seventh day, fluctuation became evident, principally in the knee. Besides these accidents, clearly unconnected with the disease, and probably with the mode of treatment, another appeared. On the morning of his arrival at the Hotel Dieu, M. Caillard had judged it necessary to have him largely bled from the foot. In consequence of his sudden movements in a state of exasperation, two lancet points had been broken in the inner side of the tibia. These foreign bodies excited violent inflammation of the foot and back part of the leg, of which the patient complained much, and every thing denoted the formation of a large abscess in these parts.

"These symptoms seriously threatened the life of the patient; nor were they the only ones; vomiting of greenish fluid occurred; the abdomen became tender when touched in the region of the cœcum, and fever appeared. Some imprudent person told the patient that he had been rabid, and that an experiment had been performed upon him: from that time his mind became affected, he despaired of recovery, and feared at every moment that it was intended to suffocate him; in short, on the eighth day all hope of recovery was lost, and he died in the early part of the ninth; his death presented nothing remarkable; he sunk in a state of imperfect delirium.

The body was opened twenty-two hours after death, in presence of a great number of physicians and students.

Dissection.—"Our attention was first directed to that which had evidently caused the death of the patient: we found a large abscess in the back of the leg, occupying the space between the heel and the projection of the calf. We found the two lancet points still sticking in the inner side of the tibia, and surrounded by pus and the inflamed periosteum.

"We found the joints of the knee, elbow, and wrist of the left side filled with pus, and their synovial membrane highly inflamed. The cartilages, as often happens, did not participate in the affection.

"We did not expect to find any serious lesion of the intestinal canal, as no very striking symptom, connected with that part, had appeared; but the hemorrhage from the anus, and the pain which took place, indicated that it could not be altogether healthy; in fact the mucous membrane towards the termination of the small intestine, was reddened by the injection and development of its veins; this redness extended in a slighter degree as far as the jejunum. At the junction of the ilium with the cœcum were a dozen small superficial ulcerations: the largest were three lines long, and two wide; that they were recent, was proved by the corresponding mesenteric glands being but little swelled, and not changed in structure. The large intestine, pharynx, œsophagus and stomach, presented nothing worthy of notice.

"One remarkable phenomenon, was the decided putridity of the blood. It was every where fluid, and had given out a large quantity

of gas, which distended the heart and great vessels, and had caused sub-peritoneal emphysema of the stomach and intestines. The lungs were healthy, though somewhat loaded at the back part; the smaller bronchial divisions were red, but the trachea was healthy.

"The nervous system presented nothing remarkable: there was an inconsiderable quantity of reddish serum at the base of the cranium, and in the vertebral canal. The veins of the brain and spinal cord were filled with red and fluid blood. The ganglia of the sympathetic nerve were in their natural state. The little wounds and the scar on the hand were examined attentively, and all present were struck by the analogy of the wounds with bites, and of the scar with the effects of recent cautery.

"It results from this history, that a disease presenting all the character of rabies, ceased on the introduction of a pint of warm water into the veins; that the patient survived this introduction eight days; that it did not appear to have produced any accident; and that death was caused by a local disease, unconnected with hydrophobia and the new mode of treatment.

"The hope of curing rabies by injecting water into the veins, already resting on some experiments on animals, hence acquires additional probability. It may even be possible, as some of my learned associates at the Hotel-Dieu have suggested, that the same measure may prove useful in certain extreme cases, in which the common resources of medicine are inadequate."

VII. MIDWIFERY.

One of the most important discoveries in female diseases is the emmenagogue, proposed by Dr. Lavagna, of Milan, which we were among the first to publish in this country, consisting of ammonia, qualified with milk, injected per vaginam. It has, we understand, been successfully tried both in public and private practice in this country. Dr. Copland thinks very plausibly, that other stimulant injections, such as wine properly diluted, might answer the same indication.

M. Breschet's *Case of extra-uterine Pregnancy.*—In November last, M. Breschet read to the Royal Academy of Medicine, at Paris, the Memoir of a singular case, in which the fœtus appeared to have been developed on the very substance of the uterus. The case came under his own observation; but he has brought together notices of similar cases from writers, who, in describing the occurrence, appear, he thinks, to have mistaken its nature.

M. Miguel *on Puerperal Convulsions.**—This work obtained the prize proposed by the Society of Medicine of Paris for 1820, and appears to be a very complete work on the subject.

* Traitè des Convulsions chez les Femmes enceintes au Travail et en Couche, &c. Par A. Miguel. Paris, 1824.

M. CHAUSSIER *on Puerperal Convulsions.*—The Belladonna ointment seems to be fast gaining ground, as a local application. Our author employs it extensively, made from two drachms of the extract, moistened with distilled water, and triturated with simple cerate or prepared lard. He applies it to the os uteri by means of a small syringe, rounded at its extremity, and having an aperture which will admit the tip of the little finger. The piston is withdrawn, and a bit of the ointment, the size of a small filbert, is put into the aperture. The syringe is directed by the finger to the os uteri, and the ointment is then pushed out by the piston. It will dilate the os uteri in about thirty or forty minutes, without affecting the fundus or the body of it. M. Chassieur has used this with great success from 1811.

VIII. MEDICAL JURISPRUDENCE.

This study is going on most vigorously, and treatises are multiplying upon it in all quarters. In a former part of this Number, we have reviewed, at some length, Dr. Gordon Smith's useful Manual; and we have besides no fewer than three works of merit on the same subject.

Professor BECK's *Elements of Medical Jurisprudence.**—We have just received a copy of this work from the author, who deserves great credit for his arrangement and condensation of so many desultory facts, into clear order and judicious detail.

Dr. WILDBERG's *Practical Manual.*†—This is the first time we have seen Medical Jurisprudence introduced into a general system of physic, though it is, we think, a highly laudable innovation, except for the space which it must occupy. Dr. Wildberg has only published the three first parts of his Manual. The first is on Medical Police, a branch, to our shame, almost unknown in Britain. The second part is on Legal Medicine. The third part is on the manner of drawing up Medical Reports.

M. CHAUSSIER's *Collection of Memoirs on Legal Medicine.*‡—This work is about the same size as Dr. Smith's, and it contains many valuable facts.

Dr. GORDON SMITH's *Oration.*—The annual oration delivered before the London Medical Society was by Dr. Smith,

* Elements of Medical Jurisprudence. By T. R. Beck, M.D. Professor of the Institutes of Medicine, and Lecturer of Medical Jurisprudence in the College of Physicians and Surgeons of the Western District of the State of New York, 2 vols. 8vo. Albany, 1823.

† Praktisches Handbuch fur Physiker. Von C. F. S. Wildberg, 8vo. Munster, 1823.

‡ Recueil de Memoires, Consultations, et Rapports sur Divers Objects de Medicine Legale. Par M. F. Chaussieur, 8vo. pp. 519. Paris, 1824.

and we were much gratified that he selected his favourite subject of Medical Jurisprudence. We should be most willing to give an abstract of the oration did our limits permit; but it was too closely condensed, and so well reasoned, that it would require many pages to do it justice. We hope the Doctor will be prevailed on to publish it, as it contained many very important and interesting facts, and excellent reasoning on this now fashionable study.

IX. MATERIA MEDICA AND CHEMISTRY.

The republication of the London Pharmacopœia is the most prominent event in this department. We need scarcely say, that it seems to have produced very general disappointment, both from the non-introduction of new medicines, now daily used by most of the members of the College themselves; and, also, from the non-expulsion of many which are never used at all; while, so far as chemistry is concerned, the College seems not to be aware that it has made any progress at all for the last fifteen or twenty years, and the submuriate and oxymuriate of mercury, &c. &c., remain unchanged. But, without animadverting farther, where there is so much room for it in almost every page, we shall proceed to put in a succinct form, a view of the changes introduced.

New Articles in the Pharmacopœia.—Acetic Acid, distilled from wood, or Pyrolignic Acid; Bismuth, Cubebs, Elecampane root, Croton Oil, Garden Lettuce, Rhatany root, Black Pitch, Stramonium seeds and leaves, the Seeds of Conium, Colchicum, and Digitalis; Sulphate of Potass; Subcarbonate of Magnesia; Tartaric Acid; Glass of Antimony, Syrup of Sarsaparilla, Compound Confection of Pepper; and Ammoniated Spirit of Colchicum.

Expunged Articles.—Aloe Vulgaris, Vinum Album Hispanicum, and Oxide of Antimony.

Table of the Changed Names.

NOMINA PRIORA.	NOMINA NOVA.
Acidum Aceticum.	Acidum aceticum dilutum.
Arsenici Oxydum.	Arsenicum album.
——————— sublimatum.	Arsenicum album sublimatum.
Calumbæ *Radix.*	Calumba.
Ceratum Lyttæ.	Ceratum Cantharidis.
Ceratum Plumbi Superacetatis.	Ceratum Plumbi Acetatis.
Cucumis Colocynthis, *Pomorum Pulpa.*	Cucumis Colocynthis, *Peponum Pulpa.*
Elaterii *Poma.*	Elaterii *Pepones.*
Elettaria Cardamomum.	Matonia Cardamomum.

Emplastrum Lyttæ.	Emplastrum Cantharidis.
Infusum Lini.	Infusum Lini compositum.
——— Rosæ.	——— Rosæ compositum.
——— Sennæ.	——— Sennæ compositum.
Lapis calcarius.	Marmor album.
Liquor Antimonii tartarizati.	Vinum Antimonii tartarizati.
Lytta.	Cantharis.
Lytta vesicatoria.	Cantharis vesicatoria.
Magnesia Carbonas.	Magnesiæ Subcarbonas.
Oxydum Arsenici album.	Acidum arseniosum.
Pix arida.	Pix abietina.
Plumbi Superacetas.	Plumbi Acetas.
Resina nigra.	Pix nigra.
Tinctura Lyttæ.	Tinctura Cantharidis.
Unguentum Lyttæ.	Unguentum Cantharidis.
——— Resinæ nigræ.	Unguentum Picis nigræ.

X. BOTANY.

Professor Hooker, of Glasgow, one of the first botanists in this country, has undertaken a work on General Botany, but, we regret to say, according to the *natural* method, which is any thing but natural. He intends, also, it is said, to discard Latin phraseology: we confess we cannot conjecture how he will accomplish such a task. Sir James Smith has, at last, published part of his British Flora in English: we say *part*, for like his Flora Britannica, we fear it is not likely ever to be completed. The truth seems to be, that Sir James is afraid to risk his phenogamous reputation by meddling with the obscurer parts of the Cryptogamiæ. But if we are right, why does he not obtain the assistance of Brown, or K. Greville, rather than leave his *opus magnum* in its present unfinished state? We strongly recommend to junior students a little work, called "First Steps to Botany," by Dr. Drummond of Belfast, as one of the plainest and most interesting introductions which we have seen. The Americans are making much progress in Botany; and, among other works of merit, we may mention Torey's Flora of the Northern and Middle Sections of the United States.

XI. ZOOLOGY.

After a great pause in Zoology in this country, there has appeared part of the Translation of Cuvier's Régne Animal, with notes, &c., by Mr. Griffiths. The first number of a Journal, also devoted to Zoology, and conducted by several Naturalists of name, has appeared since the publication of our last Number. The celebrated Bremser, of Berlin, has published splendid folio plates of intestinal worms; but, though this may

lead to accuracy of idea, we are doubtful whether any practical utility can be served by it. We gave, in our last Number, an interesting paper containing Bremser's notions respecting the formation of intestinal worms.

Selected Papers.

Contributions to the Pathology of the Stomach, the Pancreas, and the Spleen. By JOHN ABERCROMBIE, M.D., Fellow of the Royal College of Physicians, Edinburgh.

(From the Edinburgh Medical and Surgical Journal for April, 1824.)

PART II.—DISEASES OF THE PYLORUS.

Though the affections of the pylorus seldom admit of medical treatment, there are several points connected with the pathology of them that are worthy of attention. The disease usually begins with obscure symptoms, like a slight dyspeptic affection—obscure pain, indigestion, uneasiness after eating, &c.; and these symptoms go on increasing gradually, until, after a considerable time, the case puts on those appearances which indicate the existence of fixed and organic disease. In other cases, the first symptoms are more severe, having the characters of an acute attack; and after the first violence of them has subsided, periodical vomiting continues and becomes permanent.

When the disease has reached a certain period of its progress, we usually expect to find it characterized, by periodical vomiting, returning with great regularity at a certain period after a meal; with fixed uneasiness at the epigastric region; and we commonly expect to discover, by examination, some induration in the region of the pylorus. All these symptoms, however, admit of considerable varieties. Indeed, with regard to organic diseases of the stomach in general, I think we are too much in the habit of expecting the symptoms to be perfectly uniform; and of concluding upon this principle, that no organic disease exists when there are considerable intermissions of the symptoms. Attention to the history of these diseases will satisfy us of the fallacy of this principle—by showing us the many varieties of symptoms which occur in connexion with organic affections of the stomach, and the remarkable intermissions of the symptoms which may occur even at a very advanced period of them.

From these remarkable intermissions in the symptoms, while organic disease was present, and advancing to a fatal termination, the following case is of some importance.

Case VI.—A gentleman, aged 30, was for several years liable to paroxysms of pain in the stomach. The pain usually continued for several hours, and went off with vomiting, and it returned at uncertain intervals, frequently of many weeks. Upon several occasions, he appeared to have got entirely free from it. He was in other respects in good health, except being considerably troubled with hæmorrhoids, until about a year before his death, when he was suddenly seized with copious vomiting of blood. This soon went off, and in a few days he was in his usual health; but from this time his former complaints rather increased. The attacks of pain, followed by vomiting, were more frequent, and he was again several times attacked with vomiting of blood, but still he had considerable intervals of health; no hardness could be discovered by examination, and that uniformity of symptoms was entirely wanting, which usually accompanies organic disease. His death was rather unexpected. After having complained for two days of pain in his stomach in the usual form, he was found, in the morning of the third day, exhausted and without pulse, and died in a few hours. Three days before his death, he had been able to walk out a good deal, and made no particular complaint. *Dissection.*—The pylorus was surrounded by a mass of scirrhus, the size of an orange, very firm, nearly cartilaginous. Among the intestines there were extensive adhesions. The body of the stomach, the liver, spleen, and pancreas, were healthy. There was some ossification of the valves on the right side of the heart, and the right auricle was remarkably distended with coagulated blood. The lungs were healthy.

In the following case, the symptoms were more distinctly defined, but without any organic disease to be discovered by examination during life.

Case VII.—A gentleman, aged 66, came under my care only a few weeks before his death. He was then emaciated in an extreme degree, with an exhausted withered look. He had been long in bad health, but particularly for the last four months, during which period he had been affected with frequent vomiting, though not occurring at any regular periods. When questioned about it, he said that he seemed to vomit spontaneously, to relieve an extreme uneasiness which took place in his stomach; and accordingly, upon putting him upon a regulated diet, it appeared that he could in a certain degree prevent it. His debility and emaciation however continued to increase, and he died in a state of extreme exhaustion, in June, 1817. No organic disease could be discovered on examination; and for some weeks before his death, the vomiting had in a great measure subsided. *Dissection.*—A mass of scirrhus surrounded the pylorus, the size of a small apple, and projected in the form of papillæ into the cavity of the stomach. The principal projection of the mass was backwards, where it had formed adhesions, by means of which the pylorus was firmly bound down to the pancreas. The stomach was in other respects sound, and the other viscera were healthy. The pyloric orifice was not so much contracted as it usually is in such cases, for it admitted the point of the thumb.

The following case was still more remarkable from its progress, and the absence of all the symptoms which usually characterize the disease.

Case VIII.—A man, aged 40, came under my care in December, 1817. At that time he was weakened and emaciated to the last degree, with a weak pulse at 120, but without any other complaint; he had no pain and no cough; his appetite was good, and his bowels natural; and the functions of the stomach were entirely healthy. About half way between the ensiform cartilage and the umbilicus, a hardness was felt, which could be traced for several inches, and was painful when pressed. He had been ill 18 months, and the affection commenced with vomiting, which occurred generally five or six times a day. This continued for five or six months, and then ceased entirely; and for the last twelve months he had had no complaint except progressive debility and emaciation. He died completely exhausted in the beginning of February, having continued without any other symptom except repeated attacks of violent pain in the abdomen. There was no vomiting, and the appetite had continued tolerable, and the bowels regular. *Dissection.*—A large mass of scirrhus, four or five inches in extent, surrounded the pylorus, and the pyloric orifice was so narrowed as scarcely to admit the point of a very small finger. The inside of the mass opened upon the inner surface of the stomach, by an ulcerated surface, covered with large cancerous-looking tubercles. The other parts of the stomach were tolerably sound, and the other viscera were healthy.

These cases present to us phenomena of considerable interest in the pathology of disease of the pylorus; while they show the existence of it, characterized by gradual emaciation, without any urgent symptom, or by symptoms which suffered such remissions as did not appear to correspond with the existence of organic disease. Nor are they, in these respects, singular exceptions to the general history of the disease: for many cases are on record, which show the affection existing, and of great extent, and with remarkable varieties in the symptoms. A man mentioned by Chardel was affected with a strong pulsation in the epigastric region, in which a pulsating tumour was felt corresponding with the pulsations of the heart. It was most troublesome when his stomach was full; but his appetite was good, and the functions of the stomach were unimpaired. He became, however, gradually exhausted, and died without any other symptom, except diarrhœa and œdema of the legs. On dissection, the tumour was found to be an enormous mass of scirrhus, occupying the posterior part of the pylorus, and extending along the small curvature of the stomach. The pancreas also was hard, and the liver tubercular. A woman mentioned by the same writer, had pain in the epigastric region, followed by jaundice, and this by ascites. The jaundice be-

came very deep, with great wasting and loss of appetite; and she died of extreme emaciation, with diarrhœa. On dissection, there was found scirrhus of the pylorus, and of the pancreas; and the latter compressed the ductus communis; the other viscera were healthy. In another case, which was complicated with enlargement of the liver, the patient died, gradually exhausted by violent pain in the epigastrium, which was rather relieved by taking food; he had a feeling of constriction about the throat, with dyspnœa and dropsical symptoms, but no vomiting through the whole course of the disease. A mass of scirrhus, three inches in length, occupied the pylorus, and extended along the small curvature of the stomach.

It is indeed to be kept in mind, that in these affections, though there be a considerable mass of scirrhus existing on the outside of the pylorus, there may be very little contraction of the pyloric orifice; but it does not appear that this circumstance regulates these peculiarities of the symptoms. In Case VII. of this paper, the contraction was but small, while the symptoms were little different from those of the most common forms of the disease; and in a case by Chardel, the pyloric orifice did not appear to be contracted at all, though a large mass of scirrhus surrounded the pylorus. In this case, there was frequent vomiting, though not at regular periods, with violent pain in the epigastric region, febrile paroxysms, and rapid emaciation; and in another case, in which the pylorus was very much contracted, the vomiting was not regular, but frequently ceased for several days at a time. A man, mentioned in the Journal de Médecine for October, 1815, had loss of appetite, dyspeptic symptoms, gradual emaciation and pain in the left side of the abdomen, betwixt the umbilicus and the spine of the ilium. Nothing could be felt by examination in the seat of the pain; but, after two months, a hardness was discovered in the region of the stomach. The disease proved fatal in another month, without any urgent symptom but progressive emaciation and slight vomiting for three days before death. The stomach was found thickened through nearly its whole extent, and adhering to the neighbouring parts. The pylorus was imbedded in a mass of scirrhus, and its orifice was nearly closed. The liver was enlarged; the other viscera were healthy.

We have seen, farther, that the disease may exist, and go on to a fatal termination, without being discovered by examination during the life of the patient. This may result from several causes. The projection of the mass may be chiefly on the posterior part, and it may be bound down by adhesion, as in Case VII., so as to keep it beyond the reach of contact. But, besides this, the disease may be of so small extent as could not

possibly be discovered in this manner, while it is capable of producing the usual symptoms, in their most severe form. In a case mentioned by Dr. Morison,* the pylorus was almost totally obstructed by small tubercles arising from the mucous membrane of it, without any external disease. The patient died, after several years illness, with pain of the stomach and vomiting; and in a case by Chardel, with the same symptoms, the pyloric orifice was reduced to a very small chink, but with very little external enlargement; consequently, nothing had been discovered by examination during life, though the patient was very much emaciated.

Symptoms similar to those which usually accompany scirrhus of the pylorus, may arise from induration and thickening of other parts of the stomach, especially if the disease be of the tubercular kind. Of this I only add the following example; others are mentioned by Chardel and Morgagni.

Case IX.—A woman, aged 56, (August, 1816,) had been liable for about a year to disorders of the stomach, distention, acidity, indigestion, and occasional attacks of acute pain. After several months from the commencement of these symptoms, she began to be affected with vomiting; and for the three or four last months, had vomited daily, generally in the afternoon or evening, at irregular periods after dinner. Sometimes she escaped it till she went to bed, but then it always came on early in the night. A hard tumour of considerable extent could be felt in the epigastric region. She died extremely emaciated in September, having before her death discharged much blood, both by vomiting and by stool. *Dissection.*—The stomach adhered extensively to all the neighbouring parts, so that it was with difficulty separated from them. The cardia and pylorus were healthy, and a small portion of the stomach adjoining each of these openings. The whole of the smaller curvature, except these two small portions, presented one continued mass of scirrhous hardness, in most places an inch in thickness, and when cut into, white and very firm. On the inner surface of this portion, about half way betwixt the two orifices, there were two tumours, one the size of a pigeon's egg, the other of a hazel nut. Externally, they were of a dark purple colour; internally, white. The large curvature and the anterior part of the stomach were extensively ulcerated, of a dark colour, and very irregular thickness. At one place there was a perforation, from ulceration, the size of a shilling. The pancreas was hard, and the liver tubercular. The other viscera were healthy.

An important practical conclusion from many of the facts that have been mentioned is, that symptoms which have merely the characters of dyspepsia, may be connected with extensive organic disease, and that the most careful examination should always be made in such cases, especially if the dyspep-

* Med. Obs. and Inq. Vol. VI.

tic symptoms are accompanied by much emaciation. Even when no tumour or induration can be discovered by such examination, the feeling of an unusually strong pulsation in the epigastric region, is a symptom deserving much attention, as it is often produced by a solid body interposed betwixt the hand and the artery, though the induration may not have attained such a size as to be itself discovered by the examination.

On the other hand, it is an important fact, that long continued vomiting, occurring so periodically as to have every appearance of extensive disease, is sometimes connected with slight causes. Of this I have met with the following remarkable example.

Case X.—A lady, aged between 60 and 70, had been affected for more than 30 years with periodical vomiting, which returned so regularly a few hours after meals, that during the whole of that period, she had vomited a part of almost every meal. It was brought up without nausea, or any unpleasant effort; and the affection had never produced any bad effect upon the general health. I saw her occasionally for several years, and she continued to enjoy good health until she began to fall off rather suddenly; and died after a short illness with rapid failure of strength and diarrhœa. On dissection, the only morbid appearance that could be discovered by the most careful examination, was a small tumour like an enlarged gland, the size of a hazel nut, or a very small walnut. It lay in contact with the outside of the stomach, near the pylorus; and, in other respects, all the parts were perfectly healthy.

In a similar case by Morgagni, in which the symptoms had existed for 24 years, the only morbid appearance that could be detected, was a slight induration of the pancreas. Many years ago, I examined the body of a woman who died, gradually exhausted by daily vomiting, which had continued more than a year, and could discover no morbid appearance except the gall-bladder distended, with a great number of biliary calculi, which completely filled it.

PART III.—DISEASES OF THE PANCREAS.

Case XI.—A man, aged 56, had been in bad health for about two years, with obscure symptoms of a dyspeptic kind. He had some pain in the left hypochondrium extending into the back, with oppression of the stomach, indigestion, and gradual emaciation, and died gradually exhausted without any other symptom, except that, for a week or two before his death, there was a considerable degree of jaundice; he never had any vomiting, and his bowels were easily kept open. No disease could be discovered by examination during life,—even after he became emaciated to the last degree. *Dissection.*—The stomach and intestines were healthy. Behind the stomach, in the seat of the pancreas, there was a morbid mass, four or five inches in breadth, and

somewhat less in thickness. It was closely attached to the spine, and surrounded the aorta. It varied in its structure, some parts being hard, almost cartilaginous, others softer, and composed internally of alternate layers of yellowish and white matter. The liver was somewhat enlarged and soft. The other organs were healthy.

Case XII.—A woman, aged about 40, was affected with slight uneasiness in the region of the stomach, and frequent vomiting. The vomiting gradually increased in frequency, until she vomited almost every thing she took into the stomach, and she died, gradually exhausted, without any other prominent symptom, after the vomiting had continued about a year. A remarkable circumstance in this case was, that though she died with gradual and progressive loss of strength, there was no emaciation; but on examining the body, a coating of fat two inches in thickness was cut through in opening the abdomen. *Dissection.*—The pancreas was found in a state of scirrhous hardness, without much enlargement. No other morbid appearance could be detected in any of the viscera.

Case XIII.—A young man, aged 16, a printer, in May, 1812, began to complain of pain in the region of the stomach, extending through to the back. It continued, and rather increased, but without confining him from his usual employment, until July, when he began to be affected with vomiting, which generally occurred two or three hours after dinner. He commonly retained his breakfast. In September, when I first saw him, he vomited every thing. He was then much wasted; and a large irregular tumour was distinctly felt in the epigastrium, which was painful when pressed. He took a good deal of food, but retained nothing. His strength sunk gradually, and he died in the end of December. For eight or ten days before his death, the vomiting ceased, and he was then affected with severe diarrhœa. *Dissection.*—The pancreas was enlarged, so as to form a mass seven or eight inches long, about five inches broad, and about three inches in thickness. The stomach, the duodenum, and the arch of the colon, had formed adhesions to the mass; and the stomach seemed a little thickened in its coats. The other viscera were healthy.

Many cases are on record of chronic diseases of the pancreas; and they exhibit the same diversity of symptoms which occurred in the examples now described, and nearly in the following proportion. Of twenty-seven cases, which I find described by various writers, six were fatal, with gradual wasting, and obscure dyspeptic complaints, without any urgent symptom. In eight, there was frequent vomiting, with more or less pain in the epigastric region; and thirteen were fatal, with long-continued pain, without vomiting. In some of these, the pain extended to the back; and in others, it was very much increased by taking food. In several of the cases there were dropsical symptoms; and in three or four there was jaundice, from the tumour compressing the biliary ducts. In the morbid appearances also there was great variety; the pancreas being, in many of the cases, much enlarged; in others, in a state of scirrhous hard-

ness, with very little enlargement. It does not appear that any distinct relation can be traced betwixt the urgency of the symptoms and the degree of enlargement, for it existed in a great degree in some of the cases in which the symptoms were slight and obscure; and there was hardness, with little or no enlargement, in others, in which the symptoms were defined and violent.

Inflammation of the pancreas seems to be a rare disease; but several cases are on record in which it was found suppurated and gangrenous. The symptoms do not appear to have been distinctly defined. There was generally pain, which was chiefly referred to the back—while in some it had more the appearance of colic pain. Vomiting occurred in a few of the cases; but it does not appear to have been a common symptom. In a man mentioned by Barbette, who died with urgent vomiting after a short illness, the only morbid appearance mentioned, was a sphacelated state of the pancreas. The same appearance occurred in a man mentioned by Greisel, who had been liable to colic pains, and died rather suddenly, having complained only of a feeling of internal coldness. Abscess of the pancreas was observed by Tulpius and Bartholinus. In two cases by the former, it was connected with quartan fever; and in a case of continued fever, in which there had been much pain in the back, Guido Patin found an immense abscess occupying the whole of the pancreas. Portal found a complete suppuration of the pancreas in a man who died suddenly after two or three attacks of vomiting, followed by syncope. He had previously suffered from a paroxysm of gout, from which he was supposed to be convalescent. The same writer found the pancreas softened and gangrenous in a man who died with obscure pain in the abdomen, accompanied by wasting and occasional nausea and diarrhœa. A gentleman mentioned by Dr. Percival,* had jaundice and bilious vomiting; a tumour appeared at the epigastrium, his strength failed. Blood and fetid pus were discharged by stool, and he died gradually exhausted in three months. The pancreas was found greatly enlarged, and contained a considerable abscess. The ductus communis was obliterated from the pressure. Calculous concretions have been found in the pancreas. De Graaf, found seven or eight calculi the size of small peas, in the pancreas of a man who had been long liable to vomiting and diarrhœa, and died gradually exhausted at the age of thirty. Portal found the pancreas much enlarged, and containing twelve calculi, some of them the size of nuts, in a man who died of a disease of the aorta.

The ancients attached much importance to the pancreas, as

* Trans. of the King and Queen's Colleges, Vol. II.

the seat of many obscure diseases; but it does not appear that their opinions were founded on any accurate observations. There is much reason however to believe, that diseases of the pancreas have a most important influence upon the functions of digestion and assimilation, and may produce, in this manner, very serious effects upon the system, while the symptoms immediately arising from the disease are so slight and obscure, as not to indicate what organ is affected. It seems probable that this is one origin of the remarkable affection that has been called Anæmia. I have been led to this conjecture by several observations, particularly by the following remarkable case which I saw some time ago, along with Mr. Newbigging.

Case XIV.—A gentleman, aged 35, died, after an illness of about eighteen months duration, in which it was, to the last, impossible to say what was the seat of the disease. His complaints began in London with a febrile attack, which left him very weak. From that time he was liable to dyspeptic symptoms, with variable appetite, and undefined uneasiness in the epigastric region. Without any other complaints, he gradually lost flesh and strength; and when Mr. Newbigging saw him, in January, 1822, he found him thin and weak; but he was particularly struck with his remarkable paleness, even his lips, and the inner surface of his mouth, being entirely colourless. About this time he had some vomiting, and was feverish for a day or two; but these symptoms soon subsided, and left him, as before, with variable and capricious appetite, and an irregular state of the bowels, which were sometimes costive, and sometimes loose. He had frequently perspirations in the night-time, and appeared at all times languid and faint; but his pulse was natural: he took a good deal of food; and there was no symptom that accounted for his exhausted appearance. In January, he seemed to improve considerably; but in February he became worse, being affected with diarrhœa, and his urine became scanty, and deposited a mucous sediment. These complaints, however, soon subsided; and he then complained chiefly of throbbing in the head, and a constant noise in the left ear. When I saw him in the middle of April, he was reduced to the last degree of paleness and debility; but his pulse was full, strong, and regular. He took a good deal of food, and complained of nothing except a painful pulsation in his left ear. He died in the end of April, without any change of the symptoms, except that his pulse became frequent a few days before his death; but it continued full, and rather strong. The action of the heart was rather violent, and seemed to produce throbbing over the whole body.

On dissection, all the internal parts were found remarkably pale and void of blood. The heart was sound, but remarkably empty. The pylorus was thickened, and firmer than natural, and had contracted an adhesion to the pancreas. The pancreas was considerably enlarged, and was diseased through its whole structure, being in general hard and cartilaginous; but in some places soft, with the appearance of the medullary sarcoma. All the other organs were healthy.

On the Circulation of the Blood in the Head. By James Carson, M.D. Liverpool.

(From the Edinburgh Medical and Surgical Journal for April, 1824.)

The general agents which are employed in the circulation of the blood, and which themselves constitute a part of the animal machine, are the lungs, the heart, the arteries, and the veins. There are other agents which may be called general, but which do not peculiarly belong to the animal fabric. The chief of these are atmospherical pressure and gravity.

But, in addition to these, there are other powers or contrivances which may be called subsidiary, and of which the office is confined to particular parts of the circulation; among these may be ranked the machinery of the liver and the spleen.

The observations which I am now about to make will be confined to the subsidiary agents, the office of which belongs extensively to the motion of the blood through the encephalon; and, in noticing these, it will be necessary to consider, generally, this part of the circulation.

The cranium is a hollow spheriod constructed of bone. Though the shell of this spheriod be formed of several bones, yet, in consequence of the exact and perfect manner in which these bones are united by what anatomists term sutures, it may be considered to be composed of a single bone continuously of the same structure.

This osseous crust, when examined after death, and when all the softer parts have been separated, exhibits many small perforations, affording, in the sound state of the parts, a passage for nerves, arteries, and veins, besides one much larger, by which a communication is formed between the contents of the cranium and those of the spinal canal, a cylindrical tube of the same osseous structure, and perforated in the same manner, and for the same purposes, as the cranium itself.

As a foundation for the arguments which may be advanced in this inquiry, it seems necessary to examine briefly the component parts of the encephalon, beginning with the vascular and membranous parts of it.

The arteries, at their entrance into the cranium, through the perforations appropriated to that purpose, possess the same structure with those vessels in other parts of the body. They are described as taking at this place a winding or tortuous course, which is supposed to retard the impetuosity of the blood when it is too violent. Here, as in other places where they perforate, they form, by their external coat, an adhesive communication with the membrane, which, in this case, is described as a continuation of the dura mater lining the passages.

After they have entered the cranium, they for some time run in grooves formed on the internal surface of the skull, sending off, as they advance, branches to the brain and membranous parts of the encephalon. The arterial system in the head seems to differ little from the same system in other parts of the body. The capillary arteries of the head communicate with the capillary veins, in all probability after the same manner in which these vessels communicate in other parts of the body, and which is at present altogether unknown.

The part of the venous system within the head, intercepted between the ultimate terminations of the arteries and the sinuses, is in no respect peculiar or different from the same system in other parts of the body. After this, a remarkable change in the venous structure takes place. The veins do not unite to form large branches or trunks of the same structure with themselves, but open, as is well known, into vessels of a peculiar fabric, termed by anatomists sinuses. These sinuses it will be necessary briefly to describe.

The internal surface of the cranium is lined by a strong membrane, termed the dura mater, composed of two plates, and adhering throughout to the skull.

Foldings of the internal plate of this membrane cut the cranium both vertically and horizontally, separating the brain into two divisions or hemispheres, and the brain, properly so called, from the cerebellum. The two plates of which these foldings of the internal lamina of the dura mater are formed, adhere firmly together, excepting at their approach to the skull, where they separate and become attached to its internal surface at a distance from each other. The space formed by the separated plates of the dura mater, and the part of the cranium intercepted between the lines of the attachment of these separated plates, are the sinuses. Their transverse section forms a triangle. In consequence of the great strength of the membrane forming the sinuses, and of the stretch upon which it is always kept, the membranous sides of the sinuses preserve their position in opposition to any moderate force directed either against their internal or external surfaces. They are vessels whose dimensions never vary. They are very numerous; are situated in all quarters of the head; they differ greatly in size; and have each a communication with all the rest, either mediately or immediately. Such are the vessels into which the veins, returning the blood from the brain and its membranes, discharge their contents. The sinuses, by passages through the cranium, communicate with veins of the neck; and, at this part of the sanguiferous circle, the ordinary venous structure is again restored. As these vessels pass through the cranium, their external surface

forms a circular adhesion to the membranes lining the bony canals through which they pass.

With respect to the nerves, the other system of vessels of the head, it is only necessary to remark, that they also, at their exit from the cranium, form a similar attachment to that of the blood-vessels to the periosteum, lining the door of their exit. Besides the vessels now enumerated, there belong to the encephalon other receptacles which now require to be considered, and which will be found to hold an important place in the present investigation. I allude to the ventricles. The ventricles of the brain may be described as an irregular fissure, traversing the interior substance of the brain, varying greatly in breadth, and dilatable at different places, according to circumstances, into cavities of greater or less extent. The more extensively dilatable parts of this fissure have received the name of ventricles; and the narrow channels by which they communicate, have received the name of passages, or roads between the ventricles. The ventricles are generally reckoned to be four, and each communicates with all the rest, either directly or indirectly. These ventricles, when dilated, so as to form cavities, contain a watery fluid. It is still a matter of dispute, whether they are at any time altogether empty, or whether their opposing surfaces are not at all times, and at all places, separated by a portion of water. The water, which may exist in the ventricles, will, during the sound state of the parts, be distributed in a given ratio through all the ventricles. This seems necessarily to follow from the position of different parts of the brain being fixed. If a section were made to pass through the brain, taking in its course the ventricles, while the other parts remained in the relation in which they exist in life, this section would exhibit a surface, on which the ventricles and communicating passages might be compared to the lakes and rivulets upon a map.

The contents of the cranium may be divided into three parts. 1. The blood contained in the arteries and veins. 2. The water in the ventricles. 3. The parenchymatous substance of the brain itself. The membranes, the coats of the blood-vessels, and nervous substance, we propose, for the sake of argument, to place in the last of these divisions. As the limits of the cranium are fixed, and as the solid contents of it must be at all times the same, it is evident that the proportions of any of these divisions cannot vary without affecting the proportion of one or both of the other two. As the substance of the brain, during life, cannot undergo any considerable alteration suddenly, or without the operation of a slow process, and as this substance is incompressible, in a manner to be afterwards explained, and as the quantity of water cannot be instantly increased or dimi-

nished, and is itself also incompressible, it follows, that the quantity of blood contained in the head must, on the supposition of the other two divisions of the contents of the cranium remaining unchanged, be at all times the same. Let it be supposed, that the quantity of water contained in the ventricles, and the quantity of brain, two of the three constituent portions of the contents of the cranium, remained unchanged, the quantity of blood, the remaining portion, could not be augmented by any force by which the cranium was not ruptured, or the cavity enlarged. No blood, in these circumstances, could be thrown into the head by the arteries, unless an equal quantity was at the same instant discharged from the cranium through some of its outlets. As the contractions of the arteries by which blood is thrown into the head, are synchronous, no blood could be returned back from the encephalon through one artery, at the moment that a quantity was thrown into it by another. The sinuses are the only outlets through which blood could be discharged. But, by what means can any blood be displaced from the sinuses? If we consider for a moment the form and structure of these vessels, and the oblique manner by which they are perforated by the small veins leading from the brain and membranes, it is impossible to imagine that the effect could be accomplished by a force directly communicated from the heart and arteries, in the manner of a *vis a tergo*. But the system is provided with other agents by which the blood in the sinuses can be affected. These are gravity in certain positions of the head, and another still more effectual and permanent, the removal of a portion of the pressure of the atmosphere from the blood at the ends of the sinuses, communicating with the veins exterior to the head, by the dilatation of the heart and the resilience of the lungs constantly tending to increase the diameter of the veins within the chest. But this class of agents, if not so powerful as to outbalance the whole weight of the atmosphere, or if the parietes of the cranium did not yield, could not withdraw a single particle of blood from the head, unless a quantity equal to that to be abstracted, was at the moment supplied by the arteries. But the abstracting powers, though singly insufficient to move the blood in the head, being permanent, are at all times ready to co-operate with the successive injections of the arteries. By the joint agency of these two classes of powers, an impulse is given to one end of a column of fluid, and an abstraction of resilience, or, in popular language, a suction is applied at the other; and thus an easy, equable, and duly proportioned motion is given to all the blood contained between the first entrance of the arteries into the cranium and the outward ends of the sinuses; that is, to the whole blood contained within the cranium.

I do not know of any machinery with which this, for circulating the blood in the head, can in all its parts be compared for the sake of illustration. The heart and sinuses resemble, in some degree, a succession of pumps, by which water is raised to one elevation, and then from that to another; with this difference, that it is on account of the great elevation to which the water is to be raised that a second pump is required; but, in the case in question, the sinuses, or a first order of pumps, are not required on account of the elevation, but for the purpose of collecting the blood through a thousand channels from all parts of the brain, and of forming reservoirs to which the action of the second order of pumps can be more effectually applied.

The sinuses, and the veins of the neck, have been supposed to form a syphon. But it cannot be by this machine that they act at all times, at least in conveying the blood from the head. In the erect position of the head, they may form a syphon; but, in the recumbent, and, still more, in the dependent state of that part of the body, gravity, which is the cause of the motion of a fluid through a syphon, ceases to influence, and ever opposes the motion of the blood from the head; and the actual removal of a part of the pressure of the atmosphere from the blood on the side towards the heart, or some other equally effective power, is required. But no such power has been exhibited in any of the views taken of the circulation of the blood, excepting in that in which the elasticity of the lungs, and the automatic expansion of the heart, are supposed to have so great a share. Gravity, as has just been stated, may, in the erect position of the head, assist in returning the blood from that part of the heart. The co-operation of gravity with the other agents which have been mentioned, is in this case direct. But even in the pendent and horizontal position of the head, gravity, though opposed to the motion of the blood in the jugulars, has indirectly a considerable effect in securing an uninterrupted and free motion in these vessels; for, by the lateral pressure which it in these circumstances gives to the sides of the veins, gravity prevents what may be termed a collapse of these vessels, which, if it took place, would intercept the suction influence, and, by that means, it more than counterbalances the opposition which it directly supplies to the return of the blood.

A singular phenomenon, exhibited in the motion of the blood from the head, receives a striking illustration from the views which have now been exhibited, and appears to me singularly confirmatory of their truth, and may with propriety be noticed at this place. The veins of the neck, particularly the jugulars, vessels which receive the blood from the encephalon, and the pectoral cava, into which they discharge their contents, con-

trary to the usual mechanism of the veins, pulsate. For the want of a better explanation, this effect has been usually attributed to the stroke communicated by the accompanying arteries to them, and transmitted by these vessels in a secondary way to the touch. The arguments by which the opinion of the pulsations of veins, being attributable to accompanying arteries is, I think, refuted, have been stated elsewhere, and need not be repeated here. The simple, and, I trust, satisfactory explanation about to be given of this phenomenon, is this. The arteries, which convey the blood to the head, throw this fluid into the cranium by synchronous jets. An equal quantity, according to the hypothesis contended for, must at the same instant be discharged from the cranium into the veins. This must also be by jets, which cause successive currents, or, in other words, pulsations in these veins. While the contents of the ventricles, and the substance of the brain, remain unaltered, it is evident, that the quantity of blood contained in the cranium must be at all times the same. No force could, in the state supposed, increase this quantity of blood; and from this circumstance, a great security is given to the vessels of the brain, the rupture of any of which would be attended with fatal effects. Nor would the abstraction of any quantity of blood from the rest of the system, diminish that contained within the cranium. This consequence, which is so clearly deducible from the principles which I have attempted to establish, has lately been confirmed by the observations of an ingenious and able writer. Dr. Pring bled a number of animals to death, and found the blood-vessels of the head fully distended with blood. Although the quantity of blood contained within the head be at all times the same, in the circumstances stated, the distribution of it may vary. One part of the encephalon may at one time contain a greater quantity of blood than its ordinary proportion; but some other part, in that case, must contain less. In what circumstances this occurs, or what are the consequences of it, are questions which, I suspect, are at present unanswerable. A partial inflammation of the brain, if inflammation of that organ be accompanied with the same phenomena accompanying inflammation in other parts of the body, must alter the distribution of the blood in the cranium. Blood would be accumulated in the inflamed part, and there would be a corresponding abstraction of it from another. From which of these states greater danger would arise, is altogether unknown. Though the quantity of blood belonging to the encephalon must, in the state supposed, be at all times the same, the quantity which passes through it in any given time will vary according to the velocity of the blood.

We have hitherto been considering the motion of the blood

in the head in the case in which the two other constituent portions of the encephalon are supposed to remain the same. We are next to examine how far the motion of the blood in this part of the circulation may be affected by any changes in the quantities of one or both of these other portions of the contents of the cranium, by their augmentation or diminution; and, first, with regard to the substance of the brain itself.

The late Dr. Alexander Monro of Edinburgh contended, that he had proved by experiments, that the substance of the brain was incompressible. What that learned Professor meant by the incompressibility of the brain, may require some explanation. If we take a piece of the brain into our hands and squeeze it, few substances can be found more yielding and compressible. But the meaning of the term, as employed by the Professor, was, that the ultimate particles of which the brain was composed were incompressible, or that the same number of these particles would, under any different degrees of pressure, occupy the same space. Perhaps the idea may be expressed in other words, by saying, that the substance of the brain was inelastic. In this light, the muscular substance, and indeed most other parts of the body, may be considered incompressible. Previously to the time of Dr. Monro, and by many physicians of the present day, in the case of accumulation of water in the ventricles, the water was supposed to compress the brain into smaller bulk. Dr. Monro justly contended against this opinion, and maintained, that the water, in these circumstances, by pressing against the brain, caused the absorption of that organ; and that, by this means, a part of the substance of the brain was consumed, or rather dislodged from the encephalon, to give room for this increased quantity of water. An opinion was held by Dr. Monro, and indeed by all the physiologists of his day, that the office of absorption was solely performed by a peculiar class of vessels called lymphatics. Though the search had occupied the eager and ambitious toil of anatomists during the last fifty years of the 18th century, no lymphatic vessels could ever be found in the brain. It was concluded from this, that water, when once deposited in the ventricles, or in any part of the encephalon, must remain there, as there existed no machinery by which it could be removed. In the case of the disease called Hydrocephalus, Dr. Monro was induced to recommend as the only, but awful alternative, the discharging of the water by the puncture of the brain. By what machinery the substance of the brain could be carried out of the encephalon, while there existed none for the removal of water from the ventricles, neither this eminent physiologist, nor any of his followers, have attempted to explain.

But the doctrine, that the lymphatics are the only vessels endowed with the faculty of absorbing, or of taking up fluids de-

posited in cavities, has been disproved. By far the greater part of the process of absorption, it is now admitted, is performed by veins. Indeed, the lymphatics, to which the sole office of absorption was attributed, owe, in a great measure, the power which they possess, in this respect, to their connexion with the veins within the chest, where the great lymphatic trunk is subjected to the exhausting powers derived from the elasticity of the lungs and the automatic expansion of the heart.

The important physiological truth, that veins are fitted to absorb, is plainly deducible from the causes by which the blood is moved in its passage through the veins; and that they do absorb, has been fully established by the experiments of many physiologists. We are now, therefore, happily relieved from the disheartening conviction that water, when deposited in the ventricles, can never be removed by any natural process. There can exist no doubt, also, that the brain, like every other part of the body, is perpetually undergoing a process of renovation; that its substance is subject to increase and diminution; that it may be augmented under the enjoyment of luxuriant health, as well as wasted by defective nourishment, or long consuming disease.

Let it be supposed, from some cause, that the expending process has been more active than the renovating; and that, in consequence, the substance of the brain has been considerably diminished. In this case, the quantity of one or both of the two other constituent portions of the encephalon must be affected. The space that would otherwise have been a void, must be filled up by an augmentation of the quantity of one or of both of these encephalic portions. Either a greater quantity of blood must be contained in the vessels of the head, or the quantity of water in the ventricles must be augmented, or both of these effects will, to a certain extent, be produced. The last of these conditions is, I believe, the one most usually found. On the dissection of bodies reduced to great emaciation by disease, the vessels of the head are found to be turgid, the substance of the brain to be soft, and to contain an unusual quantity of blood, and the ventricles to be greatly distended with water. Sometimes, in such cases, the quantity of water contained in the ventricles is very considerable; ten ounces is by no means uncommon. Suppose there had existed no receptacles for water, such as the ventricles, and the brain to have been wasted to that degree, by which room was afforded for the admission of ten ounces of water into the encephalon, the blood-vessels of the head must necessarily have been loaded with ten ounces of blood, in addition to the quantity which they already possessed, and by which they appear to have been already too much distended. Long before they could have been distended to the capacity necessary for the

admission of so great a quantity of blood, their coats must have given way, and a fatal hemorrhage ensued; or, at all events, they must have been too much surcharged for the performance of their functions. Hence, we readily perceive the important uses of the ventricles. By becoming the receptacles of a mild fluid, they, in certain circumstances, prevent the blood-vessels from being over distended. By their greater or less expansion, they become the grand regulators of the circulation of the blood through the head. Water in the ventricles, in such circumstances, instead of being considered a disease, is, in reality, the great remedy provided by Nature for the preservation of life, in situations in which it could not otherwise exist. It is the defence set up by Nature for the protection of the breaches or weak points which may exist in this part of her works.

The ventricles of the brain, in consequence of their irregular course, are admirably situate for enabling the substance of the brain to assume that variety of position necessary, as circumstances alter, to give due support to the vessels of the head, without sustaining at any point a disproportionate distention. But, to perceive this sufficiently, the brain itself must be examined.

These uses of the ventricles are most important, necessary, and, as now described, so certainly true, as, if I am not singularly blinded, to require only to be announced to gain assent and acknowledgment of every unprejudiced inquirer. No physiologist has hitherto, I believe, even ever ventured to form a conjecture respecting the purposes for which the ventricles were designed by Nature. The demonstrator generally passes them over with the observation, that they must be of some use, as Nature never forms any thing in vain. That the ventricles may serve, besides those now explained, other purposes at present unknown, is not improbable; for Nature, a rigid economist of her means, often accomplishes various ends by the same machinery.

We have been considering the state of the brain, in which its substance is unduly diminished. Let us notice, for a moment, the opposite condition. Little water will, in this case, find admittance into the ventricles; and if the substance goes on to augment, the space assigned for the blood-vessels will be encroached upon; and if the growing process continues, sufficient room for the transmission of blood in proper quantity will not be left. I think it extremely probable that some of the species of apoplexy and of palsy are the consequence of an overgrowth of the substance of the brain. When no water is found in the ventricles, the substance of the brain will also be observed to be unusually firm and solid, showing little appear-

ance of blood upon being cut into, and the vessels on its surface slightly distended.

As the quantity of blood distributed to the head may be supposed, from the caliber of the vessels which supply that quarter being fixed, to be nearly the same, if, from an overgrowth of the brain, the quantity of this blood transmitted through the encephalon be diminished, a greater quantity must be sent to the parts of the head exterior to the cranium. Hence that redness of the face and eyes, which so frequently attend great obesity, and which is so often the precursor of the apoplectic stroke.

In the cases which, in this head of the inquiry, have been supposed, as well as in all the former, it is very evident that the abstraction of any quantity of blood from other parts of the system, could not diminish the quantity of this fluid within the cranium; and that no arterial force directed against the brain could for an instant place an additional quantity of this fluid within the same limits. Some change in the other two constituents of the contents of the cranium must take place synchronously with any alteration of the quantity of blood in the encephalon. If, however, the substance of the brain, or the water in the ventricles, or the blood itself, be at all compressible, the quantity of blood admissible into the head will be affected by changes in the pressure of the atmosphere. If any, or the whole of the three constituent portions of the encephalon be compressible in the way that has been explained, then a greater quantity of blood will be contained within the head during a high, than during a low state of atmospherical pressure. It is probable that the substance of the brain is in some degree diminished in bulk, as would happen, on the supposition that it was compressible, by an increase in the weight of the atmosphere; for in that state an unusual alacrity of mind and activity of body, as was long ago pointed out by Boerhaave, are enjoyed, while the contrary affections, both of mind and body, are at all times, I believe, to a certain extent, the concomitants of a very low state of the barometer, or a very light state of the atmosphere. If an increased quantity of blood should be admitted into the head during a higher state of atmospherical pressure, the addition would only be as much as was necessary for carrying on its circulation through the head.

It may naturally be asked, from what source is the water lodged in the ventricles derived, and how is the supply of it so regulated, that it should be at all times equal to, and never more than, the demand?

The water is unquestionably supplied from the blood, and is conveyed from those exhalent terminations of the arteries, which, in ordinary circumstances, carry a colourless watery

fluid. The mechanism by which the supply is proportioned to the demand, is a subject of considerable intricacy, but may perhaps be thus explained. Let it be supposed, that a certain proportion of the substance of the brain has been by some cause or other withdrawn, without being replaced by a fresh supply, or, in other words, that the quantity of brain has been diminished. The place of the portion of brain which has been withdrawn must be occupied by some other substance; indeed it could not be withdrawn without such a substitution being synchronously made. The augmentation of the quantity of blood distending the blood-vessels, is the direct and immediate manner in which the requisite supply of matter is made. But when the process is continued, the blood-vessels become enlarged to an unnatural degree, and in that case their coats make a resistance to further distention. A force is at this time generated by the resistance of the coats of the blood-vessels. Supposing that the contents of the cranium, as must always be the case, are all equally subjected to the pressure of the atmosphere, and that a force, generated by the resistance of the coats of the blood-vessels, existed, the necessary tendency of this will be, to remove a part of the pressure of the atmosphere from the rest of the contents of the encephalon. What will be the effects of this tendency or effort, when applied to the mouths of the exhalents and absorbents opening into the ventricles? Certainly, to increase the discharge from the former, and to diminish the suction of the latter. The natural consequence is, an accumulation of water in the ventricles, which will go on increasing, until the force generated by the resisting coats of the vessels shall be removed, or until that force shall have been balanced by an equal force, generated by the resistance afforded to further distention by the sides of the ventricles.

If, as may easily be believed to be the case, the coats of the blood-vessels of the brain do at all times make some resistance to their contents, or tend, with some force, to diminish their caliber; in that case, according to the argument now maintained, a certain quantity of water ought, almost at all times, to be found in the ventricles of the brain. Hence, the existence of water in the ventricles of the brains of persons who have been cut off in the enjoyment of perfect health, and the constant absence of adhesions between the sides of the ventricles of the brain, may be explained.

The inquiry has hitherto proceeded on the supposition that the solid dimensions of the capacity of the cranium are fixed; but, if it be pursued under a supposition of a change in these dimensions, either an increase or diminution of them, a new and extensive field opens before us. As I have already, I fear, extended this paper to too great a length, I shall confine the ob-

servations which I have to make on this part of the subject within very narrow limits. Any extensive and sudden increase or diminution of the solid dimension of the cranium must necessarily prove fatal, as the circulation of the blood must, in that case, cease before the contents of the cranium can be accommodated to the change; but if the enlargement or diminution of these dimensions be gradual and slow, they may take place to a very great extent, without the destruction of life.

The most frequent instances of the undue enlargement of the cranium occur in infancy. When explaining the structure of the cranium, it was observed that it was constructed of several bones firmly united. In infancy, it frequently happens that the bones are only united by a membranous substance, not yet in a state of ossification. This membrane, from various causes, is liable to rupture or distention; the bones are separated, and the dimension of the head consequently enlarged. To this imperfection of the *crania* of infants may, I think, be traced the great irregularities in the circulation, and the numerous diseases of the head, to which that age is peculiarly liable. If the shell of the cranium give way, and the dimensions of it become enlarged in the manner supposed, the same appearances will take place within the head as were stated to occur under a supposition of a diminution or waste of the substance of the brain. The proportions between the constituent portions of the contents of the cranium, are altered in the same way, though from a different cause. To give to the contents of the cranium that degree of pressure which is necessary for carrying on the circulation of the blood through them, in the manner that has been explained, water becomes accumulated in the ventricles. The blood-vessels of the encephalon at the same time are gorged, and the substance of the brain, though undiminished, becomes soft and flaccid, in consequence of the distention of the blood-vessels running through it. This is one of the species of that frequent disease improperly termed hydrocephalus, or water in the head; for it evidently is not the water, but the enlarged capacity of the cranium, which is the cause of the malady. It is the collection of water in the ventricles which, in these circumstances, place the blood in the head in a state to be influenced by the powers employed for its circulation. The evident remedy for this disease, is to supply the imperfections of the cranium, and to reduce its capacity to its natural and healthy dimensions. Accordingly, Sir Gilbert Blane, physician to his present Majesty, having observed that the disease termed water in the head was always accompanied by a large bregma, or what is called an *open* in the top of the head, sagaciously concluded, that the disease in question was, in some degree at least, attributable to the want of complete ossification of the cranium, and boldly attempted to

supply the deficiency by art. This he accomplished by the very simple means of compressing the head by a bandage. The effect of the treatment has been wonderful. It has not only been successful in this eminent physician's own hands; but we every day witness and hear of this disease, which two years ago was deemed incurable, completely removed by this simple, easy, and natural process. It may not be impertinent, perhaps, to remark, that about three years ago, and long before the appearance of Sir Gilbert Blane's paper, I was led to the same treatment, in consequence of the views I had taken of the causes of the circulation of the blood in the head. At this time I was desired to visit a child two months old, a patient of Mr. Reay, surgeon, of this place. The disease with which the child was affected, was what is usually termed hydrocephalus externus, and had advanced so far as to leave, in the mind of that experienced practitioner and myself, no hopes of its recovery. The head was greatly enlarged, and increasing daily; a fluctuation was distinctly felt between the parietal and occipital bones; the child was affected with coma. The bringing together the too far separated bones of the head by gentle pressure, and retaining them in that situation by a bandage, was proposed, and the proposal was readily acceded to by Mr. Reay, who also applied the bandage. The effect of the treatment was surprising. After the very first application of the bandage, which was daily renewed, the unpleasant symptoms began to disappear, and the child advanced, without interruption, to a state of perfect health, in which it at this day remains.

Fears may be entertained against this practice, lest injury be given by it to the tender structure of the brain. But it must be remembered that the brain, at the time, is in a state of overdistention, and that the pressure is only calculated to restore it to the easy condition that is natural to it. That the brain, in early infancy, may be compressed without injury to life, we have sufficient proof, from the practice of various tribes of Indians, who compress the heads of their infants into a variety of forms, conformable to the false taste of beauty prevalent among them. It is never to be supposed, however, that this remedy is to be applied without the caution which an acquaintance with the subject will not fail to supply.

There is still another state in which the ratio between the brain and the capacity of the cranium may be deranged so as to give rise to disease. Though the ossification of the cranium be complete, its capacity continues to enlarge, and this it may be supposed to do in a quicker ratio than that in which the brain is augmented. If such a condition ever takes place, it would account for those cases of hydrocephalus which occur after the age of infancy, and after the ossification of the cra-

nium had been completed. In such cases, the remedy proposed by Sir Gilbert Blane would evidently be inapplicable. When the cavity of the cranium is diminished by a thickening of the skull, or by any other means, the encephalon will be placed, in situation, similar to that in which it is when the substance of the brain exists in too great a quantity, and therefore requires no further description.

Dr. Wilson Philip, in the notice which he has done me the honour to make of my opinions respecting the powers by which the blood is moved, in a paper published in the last number of the Medical and Chirurgical Transactions, thinks that he has discovered an argument subversive of the supposition of the blood being returned through the veins by suction. The objection which he has made is, that the veins, being vessels the coats of which are yielding, are unfit for being the channels for raising blood by suction, as their sides would, upon the application of that power, be drawn together, and the vessels, of course, shut. But the Doctor does not take into consideration, that this objection can only apply to vessels through which a fluid is to be raised of a greater specific gravity than that in which the vessel is placed. If water, for instance, is to be raised to a height through the air by pumping, the stem of the pump must necessarily be strong enough to resist a collapse of its sides, in consequence of the difference between the weight of a column of water and that of the same column of air. But if the water is to be raised through the same medium, that is, through water, then an yielding vessel is sufficient; for the pressure on the internal surface of the tube is equal to that upon its external surface. The pumping of the water through the tube could not, in this case, cause a collapse in the sides of the vessels, if these vessels were once dilated by the fluid in which they are immersed. But, as the animal fabric may, so far as regards the point in discussion, be considered a vessel filled with blood, the veins are immersed in a fluid of the same specific gravity with that which passes through them, and therefore cannot have their sides drawn together by suction originating in the chest, however remote those vessels may be from the heart. The objection stated by Dr. Philip had, at the time I published the Inquiry into the Causes of the Motion of Blood, considerable weight with myself; and I conceived and stated, that a share of the power derived from the heart and arteries was extended to the blood in the veins, for the purpose of preventing the sides of those vessels from being drawn together. But I now think that such a supposition is unnecessary. In this opinion I have been the more confirmed, by considering the causes of the vacuity of the arteries after death, when blood is circulated

through its whole course by the suction derived from the elasticy of the lungs alone.

I beg leave to take notice of another error into which Dr. Philip has fallen in the same paper. He says, that, even according to my own experiments, the elasticity of the lungs of an ox is not greater than is sufficient to balance a column of eight or ten inches high, and fortunately states the page of my work for his authority. It is there stated, that upon inverting the windpipe of an ox into a pitcher of water, and then opening the chest to admit of the collapse of the lungs, when the end of the windpipe was depressed eight or ten inches below the water, bubbles of air appeared upon the surface of the water. I never for a moment dreamt that this experiment could be taken to prove the force of the elasticity of the lungs, but only its existence. From this experiment, the range of that elasticity, or the difference between the length of an elastic fibre at the times in which the lungs are fully dilated and collapsed, may perhaps be calculated, but not the intensity of that force when the lungs are fully expanded; for it must be remembered, that the lungs collapse upon an elastic fluid, which must be compressed to a considerable degree before any bubbles of air could appear on the surface of the water in this experiment. The experiments by which the amount of the elastic power of the lungs of different animals are ascertained, will be found in a paper on the Elasticity of the Lungs, published in the Philosophical Transactions for 1820, where it will be found the elasticity of the lungs of an ox was greater than the weight of a column of water 18 inches high.

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*Essay on the Motive Powers of the Circulation of the Blood.**

By David Williams, M.D.

(From the same.)

No object has engaged more of the attention of the medical world, than the circulation of the blood in health and disease; nor is it to be wondered at, when its great importance in the healing art is taken into consideration. The action of the vascular system is one of the principal indications which enables the physician to determine the nature of the greater number of diseases to which mortality is subject; it is his chief guide in directing his treatment; and, in general, after the vital spark has fled, the only cognizable disorganization which necrotomy develops to him, is the effect of a morbid excitement in some of

* Read before the Literary and Philosophical Society of Liverpool, January 2d, 1824.

its branches. Although the Harveian doctrine of the course which the blood describes through our frames be universally admitted, yet, respecting the powers which maintain its motion along that course, the most opposite opinions are entertained by men whose talents claim our greatest admiration. Indeed, neither the part which the heart performs, nor the degree of influence exercised by the blood-vessels, have yet been satisfactorily defined. Therefore, I may be allowed to say, without trespassing on the feelings of my predecessors, who have endeavoured to disclose the secret actions of the same intricate system, that all the theories which I am acquainted with on the subject, appear to me to be somewhat vague. Some writers believe the projectile power of the ventricles of the heart alone to be adequate to the circulation of the blood. Others think, that the arteries contract on the blood by virtue of their inherent irritability, by which they preserve the impulse given to it by the contraction of the ventricles. Again, others, considering the projectile power of the ventricles and arteries inadequate to the propulsion of the blood through the veins, have attributed great importance to the influence of the active power of dilatation inherent in the ventricles, aided by what has been denominated the resilience of the lungs; the heart thus acting as a forcing and a suction pump. As Dr. Wilson Philip has very ably examined the merits of the above hypotheses, in a valuable paper which is inserted in the 2d part of the 12th volume of the Medico-Chirurgical Transactions, no further notice will be taken of them in the following pages. In this Essay, we shall first of all glance over the structure and arrangement of the heart, arteries and veins; then we shall proceed with the relation of the phenomena observed during our experimental investigation; afterwards, we shall consider the deductions which they seem to warrant, by inquiring particularly into the influence of the venous system, and into the nature of the power which dilates the cavities of the heart; concluding with a brief exposition of the circulation.

Mammalia, and birds having a double circulation, have two hearts included in one (enveloped by a membrane, called the pericardium), each consisting of an auricle and ventricle, consequently the human heart has four chambers, a right auricle and ventricle, and a left auricle and ventricle; the two former are actively subservient to the pulmonary or the less circulation, and the two latter to the corporeal or greater circulation. There are valves placed between the ventricles and auricles, which favour the passage of the blood from the auricles to the ventricles, but prevent its return from the ventricles to the auricles. The movement of the ventricles are synchronous, and likewise those of the auricles; when the ventricles are in a state of dias-

tole, the auricles are in a state of systole, and *vice versa*. The structure of the body of the heart is muscular, but about its base it is partly ligamentous or tendinous. The arteries originate in two trunks from the ventricles; the pulmonary artery emerges from the right ventricle, and ramifies through the lungs; the aorta arises from the left ventricle, and branches through every part of the body. Valves are stationed at the roots of the arteries, so as to hinder the return of the blood from the arteries into the ventricles, without impeding the flow from the ventricles into the arteries. Arteries form cones, their apices at the heart, and their bases at their extreme capillaries. An artery is composed of several coats; but two only at present are worthy of our particular attention, namely, the muscular or irritable coat, and the elastic. The elastic is most conspicuous in the large arteries; in the capillaries it is not perceptible. The only termination of arteries which it is necessary to notice for the illustration of our subject, is that in veins by continuity of canal; and the only origin of veins which is requisite to mention, is that from arteries. All the veins ultimately terminate in the auricles, the cavæ returning the blood from the system at large to the right auricle, and the pulmonary veins from the lungs to the left auricle; thus constituting cones, with their bases joined to the extremities of the arteries, and their apices to the auricles. The coats of the veins possess both the irritable and elastic properties. The elastic property, with few exceptions, is not sufficient to preserve the cylindrical shape of the veins when divided, but is capable of restoring them to their original size, after they have been moderately stretched. Many of the veins belonging to the system of the cavæ, especially the superficial ones, are supplied with valves, which allow the current to proceed towards the auricle, but impede its course in the opposite direction.

We shall now go on with the relation of our experimental observations. They were made during my experiments to ascertain the effects of the pressure of the atmosphere when freely admitted into the cavities of the thorax; and also, while inquiring into the cause and the effects of an obstruction of the blood in the lungs. After suffocating an animal by throwing a ligature round the trachea, then removing the sternum, we find the heart performing its function, and the lungs in a state of inflation. During systole the ventricles feel hard, and soft during their diastole. To ascertain the influence of the active power of dilatation of the right ventricle and auricle, the cavæ were compressed, the inferior as near the diaphragm as possible, and the superior a little above its entrance into the auricle. As the auricle was thus limited to the small quantity of blood that the vena azygos and the coronary veins poured into it, it was ex-

pected that the blood which remained in the inferior cava, between the compressed part and the auricle, would have been pumped out; but no effect indicating a sudden extraction of blood from the isolated portion of the inferior cava could be perceived. Had the auricle or ventricle exercised the function of active dilatation, it must have been discovered, for the lungs were quiescent; and no muscular action, save that of the heart itself, perplexed the observation. The right auricle accommodates itself astonishingly quickly to a variation in the quantity of the circulating medium; it does not discharge the whole of its contents during its systole. After the last systole of the left ventricle has occurred, irregular and hurried, or fluttering contractions of the muscular fibres of the right ventricle take place, which continue for some time. They are seemingly excited by the stimulus of distention; for the ventricle, from the gorged state of the pulmonary artery, is unable to rid itself of the blood that continues to be forced into it from the cavæ. After the cessation of the irregular muscular action, the right ventricle feels soft, and the left feels contracted. If now one of the pulmonary veins are opened, near their junction with the auricle, no expansion of the latter chamber, or of the ventricle, takes place; but as the residue of the blood in the pulmonary veins is distilled into the ventricle, it imperceptibly softens. If the pericardium is slit open on the cessation of the irregular action of the muscular fibres of the right ventricle, the latter is soon greatly distended. If, presently after the last systole, water at the temperature of 95° is injected into the left ventricle, through an aperture in one of the pulmonary veins, it does not excite it, in my opinion, to a perfect systole, but occasions in it the same sort of fluttering contractions as the irritation of the stimulus of distention induces in the muscular fibres of the right ventricle, as described above. After extracting a heart shortly after the cessation of the action of the left ventricle, and instantly immersing it in warm water, it was immediately thrown into similar agitation to that noticed in the right ventricle from the stimulus of distention. Its action excited considerable motion in the water; but, with every deference to the opinion of others, I cannot say that I perceived the water drawn in, and then, after an interval, thrown out again. The hurried and irregular ejection, or, more properly speaking, commotion in the water, seemed to me to be the effect of the contraction of distinct fasciculi of muscle in different parts of the heart following each other, at first in rapid and irregular succession, and not the effect of the contraction of the whole of the muscular fibres of either ventricle acting in concord as during a perfect systole.

The differences observed in the subsequent actions of the heart and blood-vessels of animals destroyed with the lungs re-

tained in a state of inflation, and those destroyed by collapsing of the lungs, were the following. After the latter mode of destruction, the action of the left ventricle ceased earlier (reckoning from the instant the trachea was tied, and the instant both the cavities of the chest were freely and permanently exposed to the atmosphere, and the action of the ribs interrupted at the same time). Also, the impulsive power of the circulation was incapable of impelling the blood so forcibly into the right ventricle, which was evident from the latter offering a less resistance to the touch, and from the more gradual manner it parted with its irritability, after the last systole of the left ventricle. In fact, when the lungs are collapsed, the influence of death alone deprives the ventricle of its irritability; but when the lungs are retained in a state of inflation, the ventricle is exhausted also by the stimulus of distention. When the lungs are collapsed, the branches of the pulmonary artery are compressed, and, from the blood being precluded from entering them, they are comparatively empty; hence, the capillaries and minute veins, especially those on the peritoneum, are finely injected with blood. The aorta is equally empty after the one mode of death, and after the other.

As the physiologists of the present day unanimously agree that the heart possesses the power of active contraction, and that the coats of the arteries evince the property of irritability and elasticity, it is unnecessary to bring forward proofs to corroborate these opinions; therefore, we shall take them for granted, and proceed to the examination of the function of the venous system, whose influence in the economy of the circulation is not so generally understood. When an animal is killed by securing the trachea, the great distention of the right auricle and ventricle, which immediately succeeds the obstruction of the blood through the lungs, must, undoubtedly, be the operation of some other cause, than the active power of dilatation of the cavities themselves. After destroying two animals, one by tying the trachea, so as to keep the lungs in a state of inflation, the other by collapsing them, we observe a difference in the distention of the cavities of the right side of the heart, after the last systole of the left ventricle. The blood is conveyed most vigorously into the right ventricle when the lungs are retained in a state of inflation, which militates against the *vis a tergo* of the arteries being the immediate power which distends it. For a more lucid illustration, we shall suppose the blood to be incompressible, the veins to be passive, and the aortic system through the medium of the blood, to be the impulsive power which distends the right auricle and ventricle. Agreeable to this view, the distention of these cavities ought to be greatest after destroying an animal by collapsing the lungs; for

the blood which is admitted into the pulmonary artery, when the lungs are retained in a state of inflation, will be added by their collapsion to the corporeal circulation; therefore, the aortic system will have between it and the right ventricle and auricle, a greater medium or quantum of blood to act upon; hence it ought to be able to distend them more forcibly after collapsion, than when the lungs are retained in a state of inflation. However, according to the appearances noticed in our investigation, the reverse was the case, and the only peculiar phenomenon remarked, as the effect of the impulsive power of the aortic system, after destroying an animal by collapsing the lungs, was an engorgement of some of the capillaries and minute veins. When we take into consideration the position of the veins of the system of the cavæ, which originate from arteries by continuity of canal with respect to the motion of the blood, their forming the base of cones, and their necessarily commencing the impulsive power of that system, (the absorbent branches of the cavæ give their contents the first impetus, and the pulmonary veins do the same in my opinion,) we must, I think, agree with the celebrated Mr. John Hunter, in considering the strength of veins to be in an inverse proportion to their size. This conclusion offers an explanation of the cause of the greater distention of the right ventricle, when the lungs are retained in a state of inflation, than when the animal is destroyed by collapsing them. When the lungs are retained in a state of inflation, the whole of the circulating fluid which is propelled from the system of the aorta, into that of the cavæ, is easily accommodated in the system of pulmonary artery, the right cavities of the heart, and the larger branch of the cavæ; so that the capillaries and minute veins have no impediment to encounter, in forwarding the blood which they receive from the aortic system, towards the right cavities of the heart. On the contrary, when the lungs are collapsed, a considerable reservoir for the blood which is impelled from the system of the great aorta is lost, by the closing up of the system of the pulmonary artery; and the larger branches of the cavæ and the right cavities of the heart are not sufficiently capacious, independently of that reservoir, to contain it easily; therefore the capillaries and minute veins are early impeded in forwarding their contents, by the stagnation which takes place in the larger veins. From this cause, the minute veins are distended by the blood which continues to be propelled from the aortic system, and, of course, their impulsive power is consequently greatly diminished. Thus, from the privation of its main strength, the system of the cavæ is unable to propel the blood so vigorously into the right auricle and ventricle, when the animal is destroyed by

collapsing the lungs, as when the latter are retained in a state of inflation.

We shall next take into consideration the active power of dilatation attributed to the heart; and, in the first place, we shall inquire into its nature; then compare its characteristic qualities with the phenomena already described; afterwards we shall be able to judge whether we have arrived at any facts capable of furthering our acquaintance with the moving powers of the circulation. As Dr. Wilson Philip is the last author on our subject, whose writings I have perused, and which has already been alluded to, I shall take the liberty of quoting the following passages from his Essay, so as to give my readers a correct statement of the ideas entertained by Dr. Philip as to the nature, and the influence exercised by the inherent dilating power of the heart, and also the resilience of the lungs. "What purpose then" says Dr. Philip, "is served by the dilating power of the ventricles, increased by the tendency of the lungs to collapse? It favours the entrance of the blood suddenly propelled into it by the contraction of the auricle; and the degree of dilating power is well proportioned to this office. Without this dilating power, the tendency of the ventricle would be to remain in a state of collapse after the systole, and part of the power of the auricle would be expended in dilating the ventricle. Here, as in many other instances, both in man and the inferior animals, we see nature saving the muscular by the substitution of the elastic power." In the last sentence, we perceive Dr. Philip recognising elasticity to be the nature of the inherent power which enables the ventricles to dilate themselves. Pray what is the action of an elastic body? Mr. John Hunter thus defines it, "The action of elasticity is continual, and its immediate effects are produced whenever the resistance is removed; by which it may be distinguished from other powers."* From our definition we learn, that the action of an elastic body is permanent, and that, as soon as the resisting power which retains it in a forced position is removed, it immediately regains its natural state of rest. In order to elucidate our problem, we shall admit the body of the left ventricle of the heart to be possessed of an elastic property. As the systole of the ventricle throws the elastic property into a forced position, and as the ventricle remains for some time after its last systole in a comparative state of collapse, we have only to do away with the influence of the power which retains it during that period in that state, and the elastic property will instantly restore itself to its natural position. Before we set about releasing it from its constrained situation, we shall inquire into the nature of the power which

* On the Blood.

we have to contend with. As a state of relaxation in a muscular fibre succeeds the state of contraction, it follows, that the action of the muscular fibres of the walls of the ventricle is not the cause of the elastic property being retained in its unnatural position, for we admit contraction to be the last motion of the ventricle. The resisting power, then, must arise from the propulsion of a portion of the blood from the cavity of the ventricle, by its systole, into the aorta, without the ventricle being able, by its elasticity or active power of dilatation, to draw its wonted supply in return from the auricle. Therefore, as the elastic property endeavours, by its reaction, to regain its natural state of rest, a tendency to form a vacuum in the cavity of the ventricle must be the result, which effectually retains the elastic property in its constrained position. Now, if we can establish a communication between the cavity of the ventricle and the exterior air, it is evident that we shall be able to do away with the tendency to a vacuum, and consequently with the resistance offered to the reaction of the elastic property. Such a communication is easily established (without doing any injury to the walls of the ventricle), by opening one of the pulmonary veins near its junction with the auricle. In the narration of our experimental investigation, we are informed, that after such an expedient was had recourse to, no such phenomenon as the dilatation of the ventricle was remarked. Therefore, if we can depend on the correctness of the observations during the above experiments, and if observations under such circumstances can be relied on, we must conclude, the active power of dilatation, or the action of the elastic property of the auricles and ventricles, to be either ideal, or to be so extremely feeble, as to be capable of evading our senses under the most favourable situation in which we can place the organs for inspection; for I can scarcely believe it possible to devise more decisive modes of ascertaining the existence of such a power, though ever so trifling, than those to which we had recourse.

Further, as the action of an elastic substance is as perfect after the extinction of life, until the process of putrefaction destroys its texture, as during the life of the animal; by examining a detached heart at a butcher's stall, after its absolute death, or after its utmost contraction by the *vis mortua*, we can readily satisfy ourselves whether the walls of the ventricles have any elastic property that can be appreciated. If we find a heart contracted, and, on pressing its body so as to flatten it, that it does not present to our senses a disposition to recover its natural shape, similar to what we witness in the truly elastic arteries whose roots are attached to its base, what inference are we to draw? Why, certainly, we must infer, that it possesses no greater elastic property than muscles in common. The con-

dition of the heart greatly depends on the state of the animal when killed. Fat beasts, from their unwieldiness, and from the action of their diaphragms being restrained by their obesity, are easily overdriven, and sometimes, on their way to the slaughter-house, to prevent their suffocating, they are obliged to be *stuck*, or, from urgency, they are killed while yet breathless and ready to faint. The right ventricle of the heart of an animal killed in such a plight, is found to be gorged; and the reason appears to me to be obvious. As the blood is more or less obstructed in its passage through the lungs, previous to the sticking of the animal, the pulmonary artery, and the cavities of the right side of the heart, are necessarily more or less gorged, and the ventricle and pulmonary artery must remain so; for, during the time the animal is bleeding to death, a small portion only of the blood which they contain at the time they are stabbed can pass into the system of the pulmonary veins, for want of pure air to enable it to undergo the necessary change in the *rete Malpighii*. Thus, the right ventricle will be large and flabby; for, in consequence of its being retained in a state of extension, the action of the *vis mortua* is prevented from affecting its muscular fibres. When an animal is killed by dividing the large blood-vessels of the neck, without any previous obstruction in the lungs, then no engorgement can take place in the right ventricle; for the blood rushes with unusual impetuosity towards the point where there is the least resistance, and, in a few minutes, nearly the whole of the blood in the body escapes through the artificial outlets. I think the gorged state of the right ventricle of the heart of an animal, when killed while breathless and faint, to be another evidence in support of my opinion, that prostration of strength, arising from short continuance of anxious exertion, is the immediate effect of an obstruction of blood in the lungs.* In an animal that dies a natural death (without losing shortly antecedently much blood), the distention of the right ventricle bears a comparative relation to the vigour of the blood-vessels on the obstruction of the blood in the lungs; and the influence of the *vis mortua* affects the right ventricle in an inverse ratio to the extension of its fibres. I presume, that it was the flabby appearance of the right ventricle, arising from the above cause, that induced Mr. John Hunter to think the heart less susceptible of being affected 'by the stimulus of death,' than the other muscles of the body.

Dr. Wilson Philip also considers, in our quotation, the dilating power of the ventricles to be increased by the tendency of the lungs to collapse. The following negative evidence will, perhaps, cast some light on this obscure point. First, the ready

* See Medical and Surgical Journal, LXXVII, p. 535.

tendency of a lung to resume the state of inflation, after reducing it to a comparative state of collapse, promises no aid to the power which dilates the ventricles.* Again, the function of the heart is capable of being carried on, for the space of half an hour, independently of any assistance from the resilient power of the lungs, as exemplified by the admission of air into both cavities of the chest of an animal simultaneously. Here the tendency to form a vacuum was overcome, consequently the influence of the resilience of the lungs was abolished. The latter negative evidence proves, that the dilatation of the ventricles can be affected without the assistance of the resilient power of the lungs. The assumption, then, of the tendency of the lungs to collapse, aiding the dilatation of the ventricles, is, in my opinion, interposing an unnecessary link in the chain of causation.

In rational inquiries, when it is impracticable to adduce unequivocal evidence, we should doubtless incline to the side of the question which appears to be most consistent with known facts. For this reason, I am induced to consider *the body* of the heart to be a hollow muscle, having as little intermixture of elastic substance blended with its fibres as any muscle in the animal frame; and to think with Mr. John Hunter, that 'the contracted state of a muscle, as well as the relaxed, arises from a power inherent in itself; but the recovery, or elongation, must depend on some other power;' therefore, 'an elongator of some kind or other is required to enable every muscle to renew its action.'† To explain the mode in which I think the dilatation of the right ventricle to be effected, we shall first of all examine the condition of the cavæ, and of the right auricle and ventricle, at the termination of the systole of the latter. At this instant the cavæ appear full, and the auricle has been distended to the acme of its diastole by the cavæ through the medium of the blood, which is its elongator; and its muscular fibres are so far recovered since their last action, as to be in a state ready for receiving the impression of the stimulus which is to excite them to systole. The ventricle, as soon as it arrived at its utmost state of systole, became perfectly relaxed and inactive, with still a portion of blood in its cavity; so that it is placed under the most favourable condition for the extension of its muscular fibres, by the blood which is to be propelled into it from the auricle. The auricle contracts, and, by its systole, it dilates the ventricle. During its elongation, the ventricle remains passive. When the auricle contracts, the blood in the cavæ offers a sufficient resistance, to prevent the expelled fluid taking a retrograde course. At the conclusion of the systole of the auricle, the con-

* Medical and Surgical Journal, LXXVI, 353. † On the Blood.

dition of the two chambers will be reversed; the ventricle will be in a state of diastole, and the auricle in that of systole.

The foregoing disquisition appears to me to favour the following exposition of the circulation. We shall commence with the left ventricle of the heart in a state of diastole. By its systole, a quantity of blood is thrown into the system of the great aorta, which communicates an impulse to the blood already contained in it. The momentum given to the blood by the first impetus, is partially expended on the dilatation of the vessels; for the augmentation increases their diameter, though inappreciable by our senses. The vessels being elastic as well as irritable, recoil on the blood, by which they were distended, and first of all their trunk, from its sustaining the more immediate impetus of the ventricle. By this reaction, the blood receives a fresh impulse. As we trace the arteries towards their extremities, their elastic property gradually decreases, while the irritable increases, and also its influence as an impulsive agent. At length we lose sight of the effect so characteristic of the action of the first impetus, and we are no longer able to detect the elastic property in the coats of the vessels. We now find, in a very considerable portion of the greater circulation, the irritability of the vessels alone adequate to the impelling of the blood along their channels. Thus, by the combined influence of the left ventricle, and of the elasticity and irritability of the aortic and cavæ systems, the blood is conveyed from the left side of the heart, through the greater circulation, to the right side, with sufficient momentum, when it arrives at the right auricle to distend it when in a state of relaxation, and, during its systole, to act as a buttress to its contents, so that it may direct its whole power against the relaxed ventricle, which it is its office to replenish. The right ventricle gives the first impulse to the blood in the less circulation, in the same manner as the left ventricle does to the greater circulation; and the passage of the blood through the two circulations, and also the dilatation of the right and left chambers of the heart, are effected by similar powers.

Selected Reviews.

De la Moelle Epinière et de ses Maladies; ouvrage couronne par la Société Royale de Médicine de Marseilles dans sa séance publique du 23 Octobre, 1823. Par C. P. Ollivier, d'Angers. Paris, 1824. 8vo. p. 416.

(From Anderson's Quarterly Journal, for April, 1824.)

Owing to the labours of our modern physicians, our author is of opinion, that medicine, in a short time, will reach a de-

gree of certainty which was once thought to be altogether ideal; and, with M. Laennec, he imagines that pathological anatomy will become the polar star of nosology, and the surest guide of medical diagnosis. We may observe, however, that similar hopes have been entertained of some favourite practice from the earliest times of medicine; and it is difficult to say, whether this has happened oftenest from the instability, or the indolence of mankind. We have men who put all their trust in mercury, or purging, or blood-letting, or in the affusion of cold water, or in friction with vinegar and water; or others, who see in almost all medical phenomena, stricture of the rectum, or bile, or hepatic torpor. Such practices or opinions, indiscriminately adhered to, may have done much harm; but it is by such means only that their true value can be ascertained. Every one, therefore, who wishes prosperity to medicine, will rejoice at the present rage for pathological anatomy, and will only regret that so many attempt to describe morbid appearances, who know little or nothing about anatomy.

It is from pathological anatomy, especially, that Mr. Ollivier expects the elucidation of those diseases which have been called nervous, and of which, till the present day, our notions have been exceedingly confused, if not altogether erroneous. With a view of adding to our knowledge on this subject, he has written his present work on the spinal marrow and its diseases; which he has divided into three parts. In the first, he treats of its anatomy; in the second, of its functions; and in the third, of its pathology. In doing this, he has joined his own observations to those of others: and he publishes his work merely as a sketch or outline, to be filled up and corrected by future pathologists. The subject is, indeed, an interesting one, and it is still, as it were, in its infancy.

In his first part, our author has made many additions to the anatomy of the spinal marrow; and we regret that our limits will not allow us to give an entire translation of it. He seems to have proved that it was formed previous to the brain, and that the latter is only a prolongation of it.

The spinal marrow is so necessary to life, that there are few animals that want it; and it is always, more or less perfect in proportion, as the organization of the other parts of an animal is perfect. From all that has been written on the subject, from Hippocrates downwards, joined to his own observations, M. Ollivier concludes that the spinal marrow has a direct influence in the production of feeling and motion in the trunk and limbs, and is also an agent for the transmitting the manifestations of voluntary actions.

"With respect to the latter power, the spinal marrow is dependent on the brain; the facts, on the other hand, which seem to prove its independence, only show that the influence of the brain, on certain

vital actions, is less evident when the organization of an animal is imperfect. The short existence of animals which have no brain, and the vital phenomena of fœtuses, and very young animals, are a proof of the justness of this remark. In short, the higher an animal is in the scale of being, the more intimately does its nervous system depend upon a centre. But more is produced by the influence of the spinal marrow than feeling and motion; its influence is extended to the internal phenomena connected with the preservation of life; the circulation of the blood and respiration. Haller has made the motions of the heart depend on irritability alone; yet he has admitted, singularly enough, that their production is influenced, in an especial manner, by the spinal marrow."—pp. 61-2.

After mentioning the experiments of Legallois, Wilson Philip, Clifte, and Rullier, M. Ollivier observes—

"We must conclude that the heart may act without the spinal marrow; but that when it exists, the action of the heart is subordinate to it. The influence of the spinal marrow upon respiration is much more direct, and much more immediate. This function, indeed, is altogether dependent on it, at least in the mammalia; and the intimacy of this dependence may be explained by the connexions which subsist betwixt the respiratory nerves and the spinal marrow, from which they emanate. If we remove from an animal of the class mammalia, the origin of the eighth pair of nerves, it dies rapidly of real asphyxia, although the other respiratory nerves remain uninjured. It is of asphyxia, also, that those individuals die, in whom the spinal marrow is injured in its superior and cervical portion; and the nearer the seat of injury is to the origin of this pair of nerves, the sooner will death ensue. On opening the bodies of such persons, we find, in general, the lungs, and other internal organs, more or less injured, or crammed with blood; and this congestion is always more evident when the death of the animal has been slow. As far, then, as respiration and the circulation of the blood is concerned, we may consider the spinal marrow as a centre of insulated vitality, independent of the brain. Do not its motions, which are synchronous with those of respiration, prove still more forcibly the intimate connexion which subsists betwixt it and the respiratory and circulatory organs? In the opinion of several authors, the spinal marrow exerts an influence on other actions of internal life, by means of the great sympathetic, which, according to Legallois, has its roots in the spinal marrow; and I think this last opinion is supported by the experiments since made on the great sympathetic, by M. Weber. He has found that the size of this nerve is always in a direct ratio to that of the spinal marrow; that it is seen, but only in faint outline, in fishes where the spinal marrow is just beginning to show itself; that, as they increase in size, they preserve exactly the same proportion; and that thus, for example, it is very large in the frog, but scarcely visible in the adder, and that the spinal marrow of these two animals observes the same ratio. Another observation of the same author, appears to add still more weight to the opinion of Legallois. He found that, in proportion as the eighth pair became enlarged, and was supplied with more nume-

rous and bulkier ramifications, the sympathetic appeared diminutive in size; so that, in certain animals, the parvagum seemed altogether to supply its place. We are thus disposed to admit, that the functions of internal life have their origin in the spinal marrow, or at least, to think it extremely probable that the great sympathetic has its roots there, since the eighth pair, which in certain animals performs its office, has its origin from the spinal marrow, in all those animals which have one."—pp. 64-6.

On a similar kind of reasoning, M. Rochetti has founded his opinion, that the spinal marrow is a principal agent in nutrition; and he observes, that the activity of nutrition in animals is in the inverse ratio of the size of brain, and in the direct ratio of that of the spinal marrow; and that this law holds good, not only in the more perfect animals, but in the crustacea, and in insects and worms. M. Fray has formed a similar opinion, and makes the spinal marrow the seat of the *vis medicatrix naturæ*. But why should we waste our time in enumerating, with M. Ollivier, the mere opinions of authors on this subject. Let us rather hear him on a subject, in which a priority of discovery is claimed by an English writer.

"As we have already remarked," he observes, "that the spinal marrow contains the two principles of feeling and motion, we may inquire in what parts of it each of them resides? The spinal marrow is formed of two substances; the one external and white, the other internal and cineritious; and as anatomy shows that the filaments, which compose the roots of the spinal nerves, are evidently connected with the latter, we may suppose that it is from the cineritious part that the nerves principally derive their action. We have seen, also, that the filaments of the anterior roots are remarkably smaller than those of the posterior roots. The experiments of C. Bell, and Magendie, show that this material difference is connected with a difference of function; and they have proved that feeling emanates from the posterior, and motion from the anterior roots. However, it does not appear that each of these functions is exclusively appropriated to each order of roots; for when we excite, separately, the nerves of feeling, or the posterior, contractions are produced in the muscles to which these nerves are distributed, although, in general, they are more complete and much stronger, when the exciting cause is directed at once against the anterior nerves. In like manner, we observed slight marks of sensibility, when the anterior roots alone are irritated." —pp. 70-1.

It would appear that this intermingling of energies depends on the two cineritious fasciculi of each lateral half of the spinal marrow being intimately blended at the point of contact.

"If," says M. Ollivier, "we consider the bulk formed by the junction of these four cineritious fasciculi relatively to the white substance which surrounds them, we must allow that this central portion is much larger in man than in animals. This seems to be a new proof

that the cineritious substance is the very seat in which the active principle of the spinal marrow resides; for it evidently becomes less with age, and is much less distinct in the spinal marrow of old people."—pp. 73-4.

We shall not follow our author in his speculations concerning the use of the cerebellum, and other parts within the cranium; agreeing entirely with him that the diversity of opinion on that subject only shows that the functions of these parts are as yet but little known. The same thing may be said of the white substance of the spinal marrow.

We now enter on the third part of the work. It is divided into ten chapters; on each of which we shall be more or less diffuse in proportion to its novelty or importance.

No organ in man, in M. Ollivier's opinion, is so little liable to disease as the spinal marrow. Even those general affections which attack all textures and all organs, seem always to respect it; and though cancer has often attacked the brain, it has almost never been detected in the spinal marrow. Its diseases as yet have been little studied, and many of them are extremely rare; but Hippocrates, Celsus, Aritæus, and Galen, were in so far acquainted with them.

In the first chapter our author considers the malformations of the spinal marrow; a subject which is rather curious than useful. There are cases on record where it and the brain have been completely wanting; but in general this was more apparent than real. In such cases a sac has been formed, more or less irregular, occupying the superior and back part of the head, extending to a variable distance down the spine, and filled with a yellow and viscid fluid. This sac is generally torn at birth, in which case its existence is attested by irregular membranous shreds, but without a single trace of brain or spinal marrow. The fluid above-mentioned is the medullary matter in its rudest state. Upon the whole our author concludes, that the absence of these organs is never primitive.

The second division of this chapter is employed on the deformities of the spinal marrow. We shall notice the first and third kinds only, as our author has found no account of them in books. The first kind is the greater or less deformity of its upper extremity.

"It would be difficult," M. Ollivier says, "to give an exact idea of the form which the spinal marrow assumes where there is no brain; sometimes, indeed, there are vestiges of the organ, but in that case their figure, their arrangement, and their mode of union with the spinal marrow are so varied, so irregular and confused, that it is impossible to give an adequate description of it."—pp. 96-7.

In two cases, however, which M. Ollivier dissected, he found the appearances exactly similar; and he has given a description

of one of them. "The child, a twin, lived rather more than twenty hours. Its face was not so much deformed or flattened as it usually is in such cases. A nipple-shaped, fungous, flabby mass, of a violet colour, and covered by a thin transparent membrane, occupied the centre of the uneven surface which was formed by the summit of the head, or rather by the basis of the cranium; all round, the skin, which was covered by pretty long hair, showed the appearance of irregular scars. A part of the above mass, of the size of a filbert, was bent backwards and covered the orifice of a hole, two or three lines in diameter, which was evidently connected with the cavity of the spinal canal; all the hollows of the uneven surface and of the nipple-shaped mass, and the neighbourhood of the hole were moistened with a limpid and colourless serum," (*serosité.*) pp. 99-100.

The flabby, violet-coloured mass was found to be in the situation of the Sella Turcica. But we cannot think that there would be much utility in following the author through the remainder of the dissection; and we shall merely observe, that from the valvula Vieussenii, to the middle of the body of the second lumbar vertebra, where it terminated, the spinal marrow was of its natural appearance; the consistence of its substance being pretty firm, but containing little blood, though all the vessels of the pia mater were so turgid, as to make the membrane quite red. The mucous membrane of the bowels, it may be observed, also showed some marks of inflammation.

The third kind is the bifurcation of the spinal marrow, where the spine is single for a certain length and then is split into two, either to support two heads, or to form two separate trunks below, united above to one neck. Of these there are many instances in books; but no notice has been taken in any of them of the spinal marrow, so that we know not the manner in which the two cords are united, where the spine becomes single. There is room for believing, however, that the internal cineritious substance, formed of four distinct fasciculi, loses insensibly its crucial form, and that the two fasciculi, answering to the side of the junction, become shorter as they advance, and at length entirely disappear. A case in the Bulletin of the Faculty of Medicine, p. 201, seems to favour this opinion.

A considerable variety has been observed in the length and breadth of the spinal marrow, and a canal has been sometimes detected in it—which, however, is always the product of disorganization, and in general seems to be a prolongation of the fourth ventricle. It is also sometimes formed mechanically by the blow-pipe. Speaking of congenital dropsy of the spine, he observes that the opening of the humour is always the cause of death, and that the very few cases to the contrary, ought not to invalidate the general rule, nor authorize a practitioner to punc-

ture it. When death then occurs, it seems to be owing to an inflammation of the arachnoid; when extending from below upwards, produces, first of all convulsions, and then asphyxia. Instead then of puncturing, we should use remedies externally and internally, which may favour the absorption of the fluid; but these we think it unnecessary to particularize, as what our author has suggested on that head, is either already known or will readily occur to an intelligent observer.

ATROPHY OF THE SPINAL MARROW.

No author has mentioned the disease under this name. Bonetus, Morgagni, and Chaussier have noticed it.

"I have observed twice," says M. Ollivier, "a considerable diminution of the bulk of the spinal marrow; and it was so remarkable that it could be attributed to no other cause but real atrophy. The first instance of it I found in the body of an idiot, twenty years old, who was rickety, and had died of the most complete wasting. The lower extremities, in particular, were much wasted; the thighs strongly bent upon the pelvis, and the legs upon the thighs. This drawing back of the parts depended upon a permanent contraction which had existed for a long time. A large ulceration of the integuments had exposed the posterior part of the pelvis, and in the middle of it was seen a projection of the size of half an inch, formed by the end of the coccyx, which was black and dead; the veins of the spine were stuffed with blood; and in the posterior and middle part of the dorsal region, the cellular texture, exterior to the dura mater, was injected with a reddish gelatinous-like serum. The cavity of the arachnoid contained a rather abundant quantity of limpid serum: and the posterior and anterior median veins were fully distended with black blood, particularly those of the lumbar region. The substance of the marrow was of the ordinary consistence, *but its bulk was reduced to about one half of what is seen in the natural state; the lumbar protuberance (renflement) of the marrow was scarcely observable, so that the cord gradually grew thinner till it reached its termination.* The roots of the lumbar nerves were like threads: there was nothing extraordinary in the brain; the cortical substance formed a layer of very little thickness; and the organs of the other cavities were in a sound state. I could not learn what had been the appearances in this patient previously to his death, except that for several years he could not walk, on account of the contraction of his inferior extremities.

"The second instance of atrophy of the spinal marrow was in the body of a pretty fat old man of short stature, whose limbs had not shrunk in the smallest degree; but every where the spinal cord was diminished to about two thirds of its ordinary size. It was most contracted, however, at the lower part of the dorsal region, near the ninth vertebra; *and here its diameter from side to side was about three lines and a half, and from behind, forwards, little more than two lines. The extent of this diminution was about an inch; and the lumbar protuberance (renflement) was not so conspicuous as usual.*

The nerves which issued from it did not appear to be smaller than they are naturally; the substance of the marrow was neither softer nor firmer; and the membranes were not perceptibly injected. I could get no information with regard to the history of this individual. In both cases the spinal marrow was of its natural dimensions. It is in old people that we always find the most striking diminution of the spinal marrow; and in this way we may account for their comparative debility of motion." pp. 137-40.

This atrophy, our author thinks, may be occasioned by a defect in the nutritive process, or a local absorption may be produced by some mechanical cause—and he gives an instance of the latter. It is too long to be inserted here. In the cavity of the spine there was a complete interruption of the spinal cord from the ninth dorsal, to the commencement of the first lumbar vertebra, for a space approaching to four inches. The pia mater which established the continuation of the spinal cord was flattened longitudinally; but its vessels were not more injected at this point than in the rest of its extent. When laid open longitudinally no trace of medullary substance was found in its cavity; and though its sides were in contact they did not adhere.

In his third chapter, our author treats of wounds and bruises of the spinal marrow; but as most of his materials are gathered from well known writers, we shall not transcribe any part of them; neither shall we give his summary of the symptoms, prognosis, and treatment of such cases, as we think he has not shown a great deal of talent in conducting, or arranging his matter.

The fourth chapter, on compression of the spinal marrow, contains little novelty, if we except a few cases; indeed compression of the spinal marrow has many things, in common with its wounds and bruises. It may take place all at once, or slowly; and, in the latter case, the symptoms, for a long time, attract but little notice. They commonly depend on rickets, scrofula, and syphilis.

"One rickety patient, sixty years of age, who was only four feet high, and much distorted, was, in 1820, exposed for several months, in a ward of the Hospital de la Pitié, to cold and damp, and soon began to complain of a constant deep-seated pain in the middle and back part of his head, and down his neck. The pain gradually increased, and became much worse whenever he had a mind to eat or drink; imperceptibly the motions of his head became more difficult, and he felt, as he said, a kind of crackling in his neck. For six months, the disease continued much in the same state, when he was removed to the Bicetre, in 1821. A tumour was now observed near the neck; and his head was bent a little forward. A blister had been applied to the back part of his neck. Such was the state in which I found him.

"There was a complete numbness over every part of his neck; but he felt momentary relief when gentle pressure was made with the hand upon the tumour. The skin—of the upper part of the chest, nearly as far as the third sternal rib; that of the upper and lower extremities; and that of the trunk, as high as the epigastrium, all round—was the seat of constant numbness, accompanied by excessive itching, which the patient found it impossible to allay. Thus, all round the chest, there was an extent of about six inches (from the third to the seventh sternal rib) where the skin had preserved its natural sensibility. His urine and fæces were passed voluntarily, and his digestion was uninjured. In September, 1822, the upper extremities became weaker, the patient being scarcely able to move them, or to grasp any thing firmly with his fingers. The lower extremities were nearly in the same state. Respiration was in some degree confined. At length all these parts became gradually paralyzed, but still the skin retained its sensibility in that space of the chest, which I have already mentioned. The patient died on the 31st December, after an extensive gangrene had taken place on the sacrum and left trochanter.

"*Dissection.*—The substance of the brain was pretty firm, but without any injection of the vessels worth mentioning. About half an ounce of muddy serum was found in the left ventricle. The second cervical vertebra was enlarged outwardly and inwardly; the two first lumbar vertebræ, and their articular cartilages were diseased; and about an ounce of limpid serum was found in the cavity of the spinal arachnoid. At all these diseased points, the dura mater was thickened, and the pia mater more vascular than usual; but opposite the second vertebra of the neck, there was a depression of the spinal marrow, nearly five lines in length, and about a line broad in its centre, but insensibly diminishing in breadth at the sides. Its depth might be about half a line. Under this depression, the spinal matter was softer than usual, but not otherwise altered. In other parts the cord was softened, particularly at the lumbar protuberance, where its white and cineritious parts were quite destroyed, and had almost become liquid; yet the nerves, which corresponded to these altered parts, had preserved their natural dimensions. The softened points of the spinal marrow corresponded exactly to the parts which had been the seat of the painful itching, and of the palsy which had succeeded it; and it was not without astonishment I saw the marrow perfectly sound in the situation which was connected with the circular space on the chest, where, during life, I had observed that the skin retained its sensibility."—pp. 192-7.

Compression may be occasioned, also, by caries and displacement of the bones—by internal tumours, and by dilatation of arteries in the neighbourhood of the marrow; examples of all which may be found in books; and our author has himself given some. The enormous dilations which, in old people, are so often found in the veins of the spine, and in some of the spino-medullary veins, will also produce a slow compression; and may not tardiness of motion, in such persons, be partly owing

to this cause? But an effusion of any kind, in the cavity of the spinal arachnoid, the presence of acephalocysts, without or within the membranes, and the gradual development of tubercles in the substance of the marrow or its membranes, may occasion its compression.

"When compression is beginning to exist, a kind of numbness is often felt at first; afterwards there is a convulsive retraction of the limbs, and at length palsy. It is principally, where compression is the result of caries of the vertebræ, that we find these latter symptoms supervening, and they seem to be occasioned by inflammation of the membranes, which frequently exists in this case. When convulsions take place, with retention of urine and fæces, instead of their involuntary evacuation, some authors are of opinion, that the disorganization of the marrow is only partial; but they imagine that its destruction is complete when there is palsy, though not unfrequently there is compression, when no symptom indicates its presence."—p. 220.

Sudden compression is, in general, mortal; especially when there is a complete loss of feeling and motion, immediately after the accident. The paraplegia, also, which results from chronic compression, is incurable.

"When compression of the spinal marrow is evidently the result of a fracture, with depression of parts of one or more of the vertebræ, we naturally conceive," says M. Ollivier, "that the first indication is to remove the compression, by raising the pieces of bone that have been depressed. This operation, which had been so often performed on the skull, had never been attempted on the spine, when Mr. Cline, junior, practised it, in 1814, at St. Thomas's Hospital. The attempt was unsuccessful, and the patient died the day after the operation."

It was performed again in the same Hospital, with partial, but momentary benefit.

We give our author's remarks on the cure, and we may observe, that a great part of it will apply to wounds and contusions of the spinal marrow.

"When the sudden compression of the spinal marrow is accompanied by violent contusions, and when the patient is of a stout make, it is always useful to begin with general blood-letting, with the view of guarding against local congestion, the effects of which cannot but be hurtful; and we employ, afterwards, the ordinary method of cure, by derivation. When compression is the consequence of a certain alteration of the osseous texture, and occasioned by rickets, scrofula, or syphilis; these are the diseases which must be attended to. Compression, occasioned by internal aneurism, hydatids, tubercles, &c., is commonly incurable; even if there were symptoms which certainly indicated them."—p. 225.

The fifth chapter is employed on concussion of the spinal marrow. It is occasioned by falls, or blows on any part of the spine. It is sometimes accompanied by an effusion of blood on the surface of the spinal dura mater, or infiltrated through the loose cellular texture which covers the membrane; or, when concussion is the effect of a blow on the spine, there may be only a single mass of coagulated blood, which depresses the dura mater opposite to the spot which had been struck. Sometimes the pia mater of the marrow is burst in one or more places; and sometimes both the dura mater and arachnoid are similarly affected; and, in some cases, there is a hernia of the spinal marrow; all the three membranes may, also, burst at once. Effusions of blood are also found in the cavity of the arachnoid, when vessels have been ruptured by the concussion. When an alteration takes place in the marrow, it generally becomes softer, tending, if the patient live some time, to a lucid state; its colour is of a yellowish grey, the white and cineritious portions are indiscriminately blended; and sometimes the capillaries which cross it, are seen in an inflamed state. The vessels of the pia mater, also, where that membrane covers the diseased part of the cord, are fuller of blood than ordinary. Among the cases given by M. Ollivier, we particularly refer the reader to the curious case of Clotilda Frison, which occurred at the Hotel Dieu of Angers.—p. 229. In some cases the concussion appears to have exerted its hurtful influence only upon the sensibility, which emanates from the filaments of the sciatic nerves in all their extent, whilst that which depends on the crural nerves is preserved entire.

The symptoms resemble those occasioned by wounds of the spinal marrow. Convulsions are sometimes present.

"In some cases," says our author, "the palsy, which at first had been confined to the lower extremities, insensibly mounts up again, and produces death, when the general state of the patient gave a hope of recovery. When the concussion has not been very great, the symptoms, on the contrary, gradually abate; feeling and motion again make their appearance by degrees, sometimes in company; but feeling sometimes by itself at first, and thus the nervous and muscular functions are restored to their original integrity."—p. 248-9.

Recoveries are not uncommon, even where patients have fallen from a great height; while others have died in consequence of falling backwards off their own feet. Death generally follows a severe concussion of the upper part of the marrow; but when the lower part of it has been the seat of injury, life has been occasionally prolonged for months.

"In concussion of the spinal marrow—the first remedy is bloodletting; and, if the patient is of a robust habit, it should be repeated

frequently. Local blood-letting, either on the part of the spine injured, or over its whole extent, is equally advantageous; of course, it should be less extensively employed, if the patient is of a weakly constitution; but, in place of leeches, frictions with an irritating liniment, dry cupping, and rubefacients may be substituted with advantage. But in every instance we should begin with a general blood-letting. When the symptoms continue, derivative remedies are likewise very efficacious. If there is retention of urine, the patient's water must be drawn off with the catheter, and if he is constipated, glysters, slightly purgative, should be administered. Dry rubbing of those limbs which have been attacked with palsy may likewise assist in restoring feeling, and the power of motion to the parts. The patient, besides, should be restricted to a low diet; and his ordinary drink should be diluting gruels (viranes) Should there be a partial luxation of any of the vertebræ, we can do nothing more than apply discutient compression on the seat of the deformity, and recommend rest."—p. 251.

Such is the treatment recommended by our author, which, in a similar case, would readily suggest itself to any man moderately acquainted with his profession: and which, possessing so little novelty, we should apologize to our readers for inserting, did we not conceive it to be our duty to give them an idea of the author's practice in his own words.

The effusions observed in the spinal canal, which M. Ollivier treats of in his sixth chapter, are either sanguineous, serous, or gaseous. They may exist on the outside of the dura mater, or in the cavity of the serous membrane which envelopes it and the pia mater; and in some cases they are found, at the same time, betwixt the arachnoid and the pia mater: or they may exist in the interior of the spinal marrow. Our author never knew a sanguineous effusion occur here spontaneously; it is generally the consequence of external injury. Sometimes the blood effused is in such quantity, as not only to fill the canal, but to ingurgitate into the cranium. Vessels spontaneously ruptured at the base of the brain may produce it very suddenly; and such effusions into the spinal canal are by no means uncommon. *Primitive* extravasation of blood, however, may occur not only in the spinal arachnoid but in the inside of the cord itself, similar to that which in the brain forms apoplexy; but, as yet, it has been met with only in its upper portion. In the cavity of the spinal arachnoid we frequently meet with serum in various quantity; indeed it is always more abundant there than in other serous cavities, in proportion to the extent of the membrane. The serum is sometimes yellow and limpid, or whitish, or muddy; but it is rarely flaky, although it is pretty often bloody. It generally fills only the lower part of the canal; but it is diffused through its whole extent: it constitutes *hydrorachitis, or spina bifida.* In hump-backed patients the cavity of the arachnoid

contains much serum. Sometimes an accidental injury of the membranes will occasion a very rapid and abundant exhalation of serum. It is sometimes the consequence of hydrocephalus; but there can be no doubt of its often existing as a primitive disease. In a portion of the canal the medullary substance may be slowly absorbed and replaced by a serous fluid filling the cavity of the pia mater.

There is no symptom which points out with certainty the existence of an effused fluid in the spinal arachnoid; far less any by which we can ascertain the nature of the fluid. We can merely form a probable conjecture from an attentive examination of the case. But what our author calls ascending and descending palsies, are supposed to have often some connexion with effusion into the spinal cavity. The remedies he speaks of in this case, are not materially different from those recommended in concussion, &c.

Speaking of gaseous effusions, our author observes—

"I have never noticed a single particle of air in the cerebral arachnoid of those subjects, in whom I had detected it in that of the spinal canal; yet we may readily conceive that these two phenomena may depend on each other. It is not uncommon to find the lumbar portion of the membranous canal, more or less distended by a gaseous, inodorous, colourless fluid; and which cannot be attributed entirely to putrefaction. In a woman, sixty-five years old, who died of chronic peritonitis, I found the lumbar region of the canal very much distended by a gas, which escaped instantly upon my puncturing the dura mater, when the turgescence of this membrane gradually subsided. The luminous texture under the arachnoid, which covers the roots of the lumbar nerves contained a prodigious quantity of very fine air bubbles, which floated above the limpid serum effused into this part of the canal. The vessels of the spine were not injected. This woman had been dead twenty-two hours: the body, which was very fat, showed no mark of approaching putrefaction. It was in the beginning of October, 1822. In the same subject I found an emphysema of the cellular texture, lying under the mucous membrane of the stomach."—pp. 290-1.

M. Ollivier has also found air collected under the spinal dura mater in children; and in one man and one woman, betwixt the arachnoid and the pia mater; in all of which subjects, the dissection had been made within twenty-four hours after death, and in February and March. M. Ollivier thinks that this separation of air is independent of putrefaction, but he cannot say whether the kind of disease has any effect in its production. He detached it after hydrocephalus, tubercular phthisis, a cancer of the womb, and pneumonia. Bonetus and Spielenberg, are the only authors who have given instances of it.

In the seventh chapter we have an account of arachnitis, or inflammation of the arachnoid.

"It is very seldom that we find," says M. Ollivier, "the inflammation of the membranous coverings of the spinal cord confined to the vertebral canal alone. Inflammation generally, at the same time, attacks the coverings of the brain. For the most part, the arachnoid which lines the dura mater of the spine, and lies over the pia mater of the cord, is covered by a whitish opaque exudation, something like a membrane; more or less adherent, and of variable thickness and consistence; and which is found sometimes in the whole length, and sometimes only in a portion of the fibrous canal of the spine, occasionally blending together all the roots of the lumbar nerves. Puriform matter has been found several times betwixt the arachnoid and the pia mater, as if it had been exhaled, not in the cavity of the serous membrane, but on its exterior surface. Serum is, for the most part, contained in the arachnoid; and there may be even an acute dropsy of this cavity. It sometimes appears of a violet-red colour, occasioned by the injection of the vessels which lie under it; and it appears thickened. Sometimes we find insulated spots which exhibit evident traces of local inflammation; and they are oftenest seen where there has been caries of one or more vertebræ; indeed they are seldom met with, unless there be some disease of the spine. At times the arachnoid shows no mark of inflammation, but its cavity is filled with fluid blood, the product of accidental exhalation. Its inflammation does not always extend to the interior of the membranes of the cord; but in general, all their vessels are more or less injected. With inflammation of the membranes, that of the spinal marrow itself may, or may not exist. As yet anatomical research has not been able to detect vessels in the arachnoid; and yet all authors speak of its inflammation. Is it not probable that the vessels which lie under it, have been mistaken for its proper vessels? It is very seldom that we find it thickened. In an insane person, I once found it very considerably thickened, from the interior union of the arachnoid and the pia mater of the marrow, and extending to the length of three inches below the cervical protuberance. The union of the two membranes formed a whitish and opake surface. I have several times observed partial injections, which, on a superficial examination, might have appeared to be in the spinal arachnoid; but, on separating it from the dura mater, it was easily seen that the injected vessels were situated under the serous membrane, the thinness and extreme transparency of which allowed the minutest branches to be readily distinguished."—pp. 295-8.

Hippocrates seems to have described this disease under the name of pleuritis dorsalis; though his prognosis is not conformable to that of modern times. Its symptoms are often combined with those of cerebral arachnitis; yet it seems to have two pathognomonic symptoms, one or other of which is always present, if they do not appear in company. The one is a general contraction of the muscles of the posterior part of the trunk, varying from simple muscular rigidity to perfect opisthotonos; the spine in its whole length forming a kind of inflexible bow. In cerebral arachnitis, the cervical portion of the

spine may be affected in this way, but never the whole of it. The other symptom is a pain in the region of the back, extending all along the spine, but severest at the place where the inflammation is most acute. This pain is, as it were, irregularly intermittent; but it is never entirely absent: indeed, in most cases, it is extremely violent. These two symptoms render the movements of the patient very painful; and at times there is a degree of pain and stiffness in the lower extremities, with rigidity of the arms and hands, and locked jaw, convulsions, or palsy, and difficult panting respiration. The face also may be flushed, and the pulse quick and various; febrile symptoms may be present.—Tetanus cannot always be ascribed to inflammation of the spinal membranes, though they have been found influenced in some cases of traumatic tetanus. M. Janson says that the palsy of the interior extremities in distortion of the spine does not depend so much on the curvature of the vertebral column, at the moment when the distortion becomes evident, as on the inflammation of the cellular texture in the spinal canal; and this he thinks is agreeable to his experience. In such a case, he has also found the spinal marrow and its flattened membranes inflamed.

"It seems to be the universal opinion," our author observes, "that death is always the consequence of arachnitis; yet would not the thickening which I observed in the body of an insane person, and which was evidently the result of an old inflammation, argue that arachnitis may be cured to a certain extent? It is rapid in its progress, but it is difficult to fix its exact duration. In one case it was found to last about thirty days, though a patient has been known to die on the third day; but we can come to no positive conclusion on this subject: our observations, as yet, have been but very limited. Can it become chronic? We are acquainted with the particular causes which are most apt to produce it. The sex and age of the patient seem to have no effect in predisposing to it. Severe contusions and fractures of membranes produce it; violent exertions may dispose to it; and it is often occasioned by caries of the vertebræ."—p. 318-19.

"In the very commencement of the disease, we must have recourse to free and repeated general blood-letting; particularly in young and vigorous subjects; but these should not prevent local blood-letting, particularly with leeches. These last should be applied in great number, all along the vertebral canal, and on both sides of the projecting part of the spinous processes. The whole body, also, should be placed in a bath, and each time it is used the patient should remain in it for several hours. At first, ulcerative remedies are thought to be improper; but when the disease has lasted some time, it is likely that they may be of service. The nature of the disease imperiously demands the strictest diet; the patient, therefore, should be made to drink freely of diluting, or emollient ptisans, or gruels." p. 320.

MYELITIS OR INFLAMMATION OF THE SPINAL CORD.

Diseases, according to M. Ollivier, have been described under this name, which seem to have been simple arachnitis. In myelitis the substance of the marrow is generally softened; to a certain extent disorganized; and sometimes converted into a yellowish fluid resembling pus. Sometimes the cord is softened in its whole thickness; sometimes in one of its central halves only, to a variable extent; and at other times, this is more evident on the side of its posterior, than its anterior aspect, and *vice versa*. The cord may also be softened in its cephalic, or in its cervical, dorsal, or lumbar portion; and at the place where the softening exists, the volume of the cord may be increased. This state M. Recamier and others have regarded as a particular alteration of the nervous system, altogether independent of inflammation, but in most cases, there can be no doubt of its being the result of inflammation. Besides, it has been observed, that of all the parts of the spinal cord, the lumbar protuberance is the part which is most frequently softened and disorganized; and next to it, in this respect, is the cervical protuberance: and it is in these two parts of the cord where the greatest quantity of cineritious matter exists, and where, consequently, blood vessels are most numerous. M. Dupuytren has observed the same thing in horses. Softening of the brain, also, takes place, most frequently, in its cineritious substance. In the nervous system, the result of inflammation is the softening or hardening of its substance. When thus hardened, the nervous texture resembles the white of a hard-boiled egg, but no vessel is seen to penetrate its centre; neither, in many cases, have the membranes indicated any change resulting from inflammation.

"In a young girl, 23 years of age," says our author, "who had been attacked with epilepsy, for the first time in 1814, and whose body I opened in 1822, the consistence of the spinal cord in its whole length, and when separated from its membranes, was so great, that I could not, without difficulty, crush it betwixt my fingers, even when I pressed it strongly: and here there was no trace of inflammation; either in the membranes, or in the nervous texture. If such a state rise from inflammation, it must have been of the chronic kind, for it has been found only in persons who have long laboured under nervous complaints. But, on the contrary, the softening is the consequence of acute and rapid diseases."—pp. 325-6

M. Ollivier has given the history of six cases of softening; one of hardening; and another, a disease of the spinal marrow, the subject of which is still living.—p. 342.

Symptoms.—They are not easily distinguished. The most

constant is a sharp, deep-seated pain, accompanied by a feeling of pungent heat over the whole length of the spine, and which motion renders much more severe. According to Klohss, it is much increased when the patient lies on his back on a feather bed instead of a mattress; but pressure never renders it more acute. To the pain of the back, which may exist only in a part of the vertebral column, is added a state of stupor, accompanied by troublesome prickings (fourmillemens) in the lower extremities, and this stupor is more or less complete, in proportion to the rapidity of the inflammation. An involuntary excretion or retention of fæces and urine are generally in some degree present. Sometimes the palsy is observed to proceed from below upwards, till it stops the breathing and causes death by asphyxia, but sometimes, (more rarely indeed,) it follows an opposite direction; sometimes there is palsy of motion only, the patient preserving the power of feeling; sometimes feeling alone is abolished; but these differences depend on the part of the marrow which is the seat of *disease* (alteration). For the most part, the palsy appears at first only on one side of the body, afterwards in both. On some occasions the limbs are subject to convulsions from the beginning, which are succeeded by palsy. Sometimes they are permanently contracted and painful; at other times they are quite flaccid.

"M. Janson supposes that palsy without contraction, is a proof that the nervous texture alone is inflamed: whereas the presence of contraction shows that inflammation has also attacked the membranes of the cord. The pulse, for the most part, is frequent and irregular. To these, which in so far may be considered as the pathognomonic symptoms of myelitis, several others are sometimes added; such as tetanus, trismus, loss of voice, difficulty of swallowing, dyspnœa, &c. But these symptoms do not appear till the disease has reached its highest degree of intensity. At times the eye is extremely sensible to light, and the ear to sound, but the patient never becomes blind or deaf. These last symptoms evidently arise from irritation of the brain or its membranes. But there is never any very apparent injury of the intellectual functions. Neither do we observe, in this disease, stiffness, and crookedness of the spine, as in spinal arachnitis, a symptom which sufficiently distinguishes the latter from myelitis."—pp. 349-50.

If the part affected is the upper region of the marrow, at no great distance from the annular protuberance, there is often then confusion of the senses; furious delirium; locked jaw; grinding of the teeth; a red dry tongue, difficulty of swallowing, inability to speak; hurried and confused breathing; vomiting, &c.; palsy of the whole body; speedy death; with the phenomena of asphyxia. Symptoms of hydrophobia also have been sometimes noticed. When the cervical portion is the seat

of inflammation, there is often complete rigidity of the muscles of the neck, and in the upper extremities, which are sometimes convulsed, at other times palsied. Respiration is then, for the most part, laborious and very painful, and is performed only by the diaphragm. When the disease is seated in the nervous substance of the dorsal portion, betwixt the two protuberances, the trunk is agitated by convulsive and incessant shocks, which do not affect the limbs, unless the disorganization occupy a part of the protuberances. Breathing is short, hurried, and diaphragmatic; and there are palpitations and irregular pulsations of the heart. To these symptoms M. Pinel, junior, adds the almost complete annihilation of the functions of the nervous system, and a general state of fever denoted by an excitement of all the functions.

"When the lumbar portion is attacked, or rather the inferior protuberance of the spinal cord, then we have palsy of the lower extremities, involuntary excretion or retention of the fæces and urine, and a deep-seated pain confined to the region of the loins. Priapism, more or less complete, has also been observed, particularly, if the disease has been the consequence of a blow or a fall; and fits of epilepsy have been present in cases where a pultaceous softness of the spinal cord has been observed after death. The more extensive the inflammation, the more numerous are these symptoms. When the disease is chronic, there is in general little pain. But we may suspect its presence where there is palsy of the limbs, and disorder in the functions of the bladder and rectum; and they make their appearance gradually. There have been instances where palsy has never shown itself; but such cases are rare."—p. 352.

The course of myelitis is rapid or slow. The patient sometimes dies on the third or fourth day, and sometimes not till the eighteenth. Its duration in the chronic state is uncertain. Myelitis may be cured, but it generally terminates in death.

It is generally the result of external causes; such as violent exertions, falls, blows given to the spine, changes in the vertebræ; whether from external violence, or rickets, scrofula, &c., and exposure to the sun in hot weather, according to Bergamaschi. The disease rarely proceeds spontaneously from an internal cause; though this author speaks of its being produced by the retropulsion of an erysipelas or a rash: and by a neighbouring inflammation; that of the brain, for instance, spreading to it. M. Ribes and Frank, think that it is often brought on by rheumatism. Its remedies are nearly the same as those for spinal arachnitis. In the chronic state, we should use topically irritating applications, aromatic fomentations, *douches* of water a little soft, and of the temperature of 30 or 40; and the other means recommended for chronic arachnitis. The feelings of the patient indicate the necessity of rest.

In the ninth class, we have an account of the morbid textures which are produced in the membranes of the spinal marrow, or in its substances. The morbid textures which make their appearance in different parts of the body are of two kinds: the first, which are called *transformations*, are analogous to some of the natural textures of the animal economy; and the second, which are not so, are new productions. As yet, two only of the first kind have been observed in the spinal membranes—viz. the cartilaginous and osseous textures. Among those of the second kind, tuberculous matter and animated foreign bodies are the only ones which have been as yet detected. In the body of the spinal arachnoid, we find pretty often small plates of an opaline white; of an irregular form; rarely more than three lines in diameter, and gradually diminishing in thickness from the centre to the circumference; and, therefore, they are much more opake in the centre. They are rarely found in the membranes of the cervical portion of the marrow. If they are numerous and small in size, the spinal marrow, when we cut into the dura mater, appears to be covered by a limpid fluid; in the midst of which, a great number of small bits of white soap seem to be floating; and this deception is occasioned by the extreme transparency of the arachnoid. On the side next the marrow, these plates are rough, though smooth and polished on the outside. But for a more particular description, we must refer to the work itself. They exactly resemble the cartilage of other parts; and when they are dried along with the arachnoid, they almost equal it in transparency. M. Ollivier has found no well authenticated case where these plates were osseous; he has several times seen the external surface of the spinal dura mater with asperities really osseous, when there existed a caries of the vertebræ; and they were opposite to the diseased portion of the bone, at which place there was generally a purulent fluid, in greater or less quantity. In one case he found the dura mater separated to the extent of about three inches from the body of the cervical vertebræ; its corresponding surface being covered with small osseous asperities; but with the effusion of pus. When there is a scrofulous cancer of the spine, it is not uncommon to find tubercular matter in the substance of the spinal membranes. Sometimes the matter is, as it were, infiltrated into the texture of the membrane; at other times it forms an insulated kernel; in a word, a tubercle, surrounded by its own covering. These tubercles are also formed in clusters, and thickening the membranes, are thus capable of pressing upon the spinal marrow. But tubercles are sometimes present when there is no affection of the bone. In a child, which died of tuberculous phthisis, M. Gendrin found a softened tubercle betwixt the spinal dura

mater and arachnoid, at the left lateral part of the base of the cranium, near the occipital foramen. Its size was that of a small nut. Nothing during life had marked its progress. Although tubercles are frequent in the substance of the brain, they have not been found in any other than the cervical portion of the spinal marrow; at least there are but very few instances of their existence farther down. The symptoms which indicate the presence of tubercles are not well known; it is thought, however, that they sometimes produce epilepsy. It is not uncommon to find vesicular worms (hydatids) of the kind called acephalocysts, likewise in the osseous canal of the vertebræ and the spinal dura mater, or at least in the cavity of the arachnoid. They appear, for the most part, to have penetrated by the holes situated where the vertebræ unite, which are then enlarged, and communicate with a cyst of greater or less dimensions, adhering to the body of these bones. Acephalocysts have never been found in the interior of the spinal marrow, though the kind of hydatid, called polycephalus, has been met with in the fourth ventricle, were so large as a hen's egg.

In his tenth and last chapter, our author considers those diseases, which, in the opinion of some authors, depend on an alteration in the spinal marrow, or its membranes. According to Alexander Tralles, and Galen, when palsy affects the limbs only, the seat of the disease is in the spinal marrow, or at least at the origin of their nerves; but, as our author thinks, this opinion is too exclusive, and not always agreeable to experience. Again, Hoffman has attributed epilepsy to an effusion of the cerebral membranes, and simple convulsions to some change in those of the spinal marrow; and M. Ollivier has found the latter opinion perfectly agreeable to fact. But in epilepsic patients, disease has frequently been found in the spinal marrow. In ten individuals of this description, M. Esquirol, found nine who were diseased in the *medulla oblongata*, and in many cases of epilepsy he has obtained much advantage from the application of moxa along the spine; chorea has also been attributed to diseased spinal marrow, but not on sufficient grounds. In tetanus, marks of inflammation have been found in the spinal marrow and its membranes; but in other cases, no change could be observed; yet it is rational to employ the same remedy for it as for arachnitis and myelitis. Brera, in a case of tetanus, from a contusion in the right thumb, applied 120 leeches along the spine, and gave Prussic acid with benefit, but the patient died; and on dissection, the spinal marrow was found inflamed on the side which corresponded with the original injury. The same thing has been observed in the locked-jaw of new-born children, and in hydrophobia. M. Ollivier and others, after those acute or chronic diseases which

are called adynamic, have observed marks of inflammation or extravasation on the surface of the spinal marrow, or at the origin of the nerves; and the like has been noticed in petechial malignant fevers. After yellow fever, a good deal of serum has been found in the cavity of the spine. Ludwig has said, that colic pains which extend to the back, and those which arise from some kinds of hæmorrhoids, schirrus, and cancer of the rectum, and in difficult menstruation and in pregnancy, proceed from irritation of the spinal marrow. Pains, also, which attend the commencement of some fevers, he attributes to difficulty in the circulation of its vessels. When the viscera of digestion are affected, it is not uncommon to find paraplegiæ supervening upon dysentery, for instance, and disappearing with the primary affection. Our author has several times produced a fatal tetanus in horses, by injecting into their veins a watery solution of nux vomica (strychnine); but on dissection he never found any apparent injury of the spinal marrow; whether the tetanic affection lasted some time, or proved instantly fatal: here, tetanus is certainly not the result of inflammation. The symptoms of both are the same, but the proximate cause altogether different.

The palsy produced by excess of venery, the abuse of spirituous liquors, and similar causes, is often curable. It seems to depend on exhaustion of the nervous centre; and it is in palsies, which depend on this cause, that nux vomica appears to be of decided benefit. It rouses the spinal marrow from its state of stupor; but it often occasions violent pain in the palsied limbs, without producing the slightest change in the palsy of motion. This medicine, as yet, has been used only internally; but our author advocates its employment in the form of friction. The hydrocyanic acid has an opposite effect; it moderates the excitement of the cerebro-spinal system. It appears to be a sedative, without any of the bad effects of narcotics; but it is never useful, except when the nervous excitement does not depend on an apparent organic change. Our author here mentions the process by which M. Hufeland makes the distilled water of bitter almonds, which he considers as a useful mode of administering the hydrocyanic acid. In French measure, it is as follows:—

"Bitter almonds, 2℔; alcohol, 2oz.; water, 6℔. We put the almonds, roughly powdered, into a retort with the above-mentioned liquids, and, by distillation, press over 2℔s. into the receiver: 24 drops of this water contain about a drop of hydrocyanic acid. The phial must be corked with emery, and kept in a dark, cool place."

We have thus given an abstract of M. Ollivier's work, which is not unworthy of a place in every physician's library; not certainly for its elegance of style, or its masterly execution, but on account of the valuable facts and observations which it contains.

Many of the cases are compiled from preceding writers, but many of them are new; and from the care and patience with which they have been drawn up, we think their authors, among the list of whom we rank M. Ollivier, entitled to much praise. It is impossible to do justice to the work in the compass of a few pages; for to do that, we should have transcribed the whole volume. However, we have tried to select its most interesting parts. The extracts, which we have occasionally interspersed, are given in the author's own words, except in a few instances, where we thought he was rather studying the mode of book-making, than brevity or persuasiveness of style. Yet he is not, in general, a diffuse writer; and he has committed so few other faults, that we can scarcely venture to criticise him. For many of the diseases he treats of, he has indicated nearly the same mode of cure; which would argue the inutility of distinguishing, accurately, betwixt the various inflammatory effusions of the spine. But accuracy, however apparently useless, must be always praiseworthy in medicine.

M. Lobstein *on the Sympathetic Nerve and its Ganglia. De Nervi Sympathetici Humani Fabrica, Usu, et Morbis, Commentatio Anatomica-Physiologico-Pathologica Taubulis Aeneis et Lithographicis illustrata.* Auctore Joh. Frid. Lobstein. 4to. pp. 174. Parisiis, 1823.

(From Anderson's Quarterly Journal, for April, 1824.)

It is altogether unnecessary to expatiate on the variety of opinions which have been promulgated, not only on the functions, but even on the form and composition of the sympathetic nerves: suffice it to say, their number and differences are such as to show that we are still far from having arrived at any thing positive and uncontroverted. Under such circumstances, it is satisfactory to observe an anatomist of M. Lobstein's reputation, adding his exertions to those made by others, with the object of illustrating a difficult and obscure subject.

As the treatise now before us is one of those which, from its form, its expense, and its publication in a foreign country, can rarely fall in the way of a large proportion of our profession, we conceive that we shall perform an acceptable office in giving such an account of its contents as shall leave as little as possible to be desired.

The treatise is divided into three principal parts, the anatomical, the physiological, and the pathological. The anatomical section includes a general description of the nerve; some particular points of its history; describes its evolution in the fœtus, and its intimate structure. It would task our reader's time and patience

more than is necessary, were we to detail the description of the nerve given by M. Lobstein, so far as it accords with that given by systematic anatomical writers. Those who may feel inclined to refresh their memories, we may refer to the works of Weber, Soemmering, Cloquet, and others of less note.

Origin and Termination of the Sympathetic.—A question has often been started, as to the origin of the sympathetic and its termination.

"A vain discussion," says M. Lobstein, "which may be avoided by describing it as a nervous cord, extended longitudinally in the axis of the body, and having two extremities, the one cephalic, the other pelvic."—Præf. p. 10.

Another question of the same kind relates to the branches it receives and gives off:—

"To obviate this," says M. Lobstein, "I have divided the branches of the sympathetic into external and internal: the external, most remote from the axis of the body, connect the sympathetic with the spinal nerves; the internal proceed to the various organs, and are constantly found to accompany the vessels."—Præf. p. 11.

Certain delicate branches of nerves found in the carotic canal, upon and about the carotid artery, and connected with the cerebral nerves, were formerly considered as the commencement of the sympathetic. Before Meckel traced the vidian nerve, and detected the deep branch which passes from it into the carotic canal, the orign of the nerve was stated to be from the abductor or sixth cerebral nerve. After his discovery, the origin was described as taking place both from the fifth and sixth cerebral nerves. In later times, the idea of origin has been abandoned, and this connexion is considered simply as the mode in which certain branches, issuing from the superior cervical ganglion, pass into the head—p. 2. On this point, M. Lobstein states that he has observed three branches proceeding backwards from the abductor nerve, and forming an obtuse angle with its continued trunk; they rest upon the carotid artery about its third flexure, and constitute a red, gangliform plexus, which is joined by the filament from the vidian nerve. From this ganglion, besides two fasciculi of soft filaments to the coats of the artery, there pass two principal branches, one behind, or on the inner side of the carotid, the other along its upper and back part, which, when they arrive at the lowest part of the carotic canal, unite into a slender cord, which receives the name of sympathetic nerve. Some varieties are occasionally met with: in one subject, an oval ganglion, three lines long, and one thick, was placed in the middle of the carotic canal, at the distance of eighteen lines from the superior cervical ganglion, with which it was connected by a slender cord. From this cavernous gan-

glion proceeded five branches, of which three surrounded the carotid artery, whilst the other two formed an anastomosis with the abductor and vidian nerves. The branch to the abductor subdivided into two filaments before its connexion with that nerve.—p. 3. By attentive examination, M. Lobstein has found that the sixth pair of cerebral nerves is formed of two principal filaments, an upper and a lower; of which the latter receives the branch from the sympathetic.

In modern times the cephalic extremity of the sympathetic has formed a favourite subject of inquiry. Bock, in his splendid work,* has described the sympathetic, after its ascent from the superior cervical ganglion into the carotic canal, as dividing into two branches, which, through the medium of the plexiform ganglion, anastomose with the deep branch of the vidian nerve; with the abductor nerve; and with the motor oculi.—Ribes† has made a similar statement, with the addition that he has sometimes found a ganglion on the anterior communicant artery of the brain. According to that anatomist, two filaments proceed from the ganglion contained in the carotic canal, first detected by Laumonier,‡ and described as the cavernous ganglion, to the third pair of cerebral nerves, with which they are connected: he also states, that some branches proceed from it to the trunk of the superior and inferior maxillary nerves. M. Lobstein, on the other hand, states that he has never been able to discover any of these filaments, though he has clearly distinguished the ganglion, and had drawings made of it.

Ribes moreover states, that, after washing the brain and its vessels, he has found a fasciculus arising from the nerves covering the carotid, which accompanies the ophthalmic artery and all its branches, and enters the ball of the eye with the central artery of the retina. He also says, that the ophthalmic ganglion receives a filament from the sympathetic, and that thus the sympathy is produced which exists between the retina and the nerves of the iris.—pp. 32-33.

H. Cloquet, in his excellent work,§ confiding in these observations, has admitted the extension of the sympathetic into the orbit and ball of the eye, and the existence of a communication between the retina and superior cervical ganglion. In the same manner he admits an anastomosis between this ganglion and the ophthalmic, or nasal nerve of Willis.

It must not, however, be supposed that the discovery of the

* Beschreibung des fünften Nerven paars und seiner Verbindungen mit andern Nerven. Meissen. 1817.

† Mem. de la Soc. Med. d'Emulation. Vol. 8, part 2.

‡ Journal de Médecine, &c. par Bacher. Tom. 93.

§ Traité d'Anatomie Descriptive.

branches of the sympathetic, in the carotic canal, is of recent date. Winslow,* many years ago, recognised and described its carotic plexus. The branches composing it were likewise observed, and described by Girardi and Fontana.

M. Lobstein's dissections, often repeated during a long period of time, do not confirm the abundance of filaments described by the authors above quoted: he has, indeed, frequently detected pellucid filaments, of a gelatinous texture, connecting the branches of the sympathetic with the motor occlui, and other nerves; but when examined with the microscope, he found that they had no pretension to be considered as branches of nerves. He objects to washing or maceration, with the view of rendering the nervous filaments more evident; for, by this process, the common cellular structure is reduced to white filaments, which may be easily mistaken for the continuations of nerves.—pp. 34-35, &c.

Anastomoses of the Sympathetic.—Another point of interest consists in the anastomosis lately described by Professor Jacobson,† of Copenhagen, as existing in the cavity of the tympanum, between the fifth pair, the glosso-pharyngeal nerve, and the sympathetic. According to that author, the superficial, or petrous branch of the vidian nerve of the fifth pair, at its entrance into the Fallopian fissure, or foramen innominatum of the temporal bone, consists of three divisions, lying in contact with each other; an upper portion, which, according to the common description, unites with the facial nerve; a middle and a lower portion, which are each included in distinct canals, penetrate the cavity of the tympanum, and form the anastomosis above mentioned. Of these two, namely, the middle and lower divisions, the first descends along a groove formed on the surface of the promontory, and, in its course, receives the second or lower division, which had proceeded so far in its particular canal. Below this last of the three divisions of the vidian nerve, and within the tympanum, appears another filament, originating from the carotic branch of the sympathetic nerve, passing through the fibrous tunic which lines the carotic canal, together with the osseous plate separating it from the tympanum, and running horizontally to the trunk formed by the anastomosis already described. The trunk, thus formed, descends, accompanied by an arterial branch and covered by the membrane lining the tympanum. It sends off some branches, the upper ones to the membrane of the foramen ovale, and one lower to the membrana tympani. It then descends to a little pit in the bone, where it enters the ganglion of the glosso-pharyngeal nerve. This fossula

* Exposition Anatomique Traité des Nerfs.

† Acta regiæ Societatis Hafniensis Medicæ. Vol. 5. Hafniæ, 1818. p. 292.

has been described by Anderseh,* who called it "receptaculum ganglioli petrosi nervi glosso-pharyngei." Anderseh also states, that it leads to a narrow canal continued into the internal ear, and containing a little nerve.

Such is the account given by Professor Jacobson, with these additions, that the anastomosis is constant, that it does not present any anomaly, and that it exists in all animals. Other inquiries render this discovery problematical, though M. Cloquet has admitted it without quoting the discoverer, and with this difference, that he asserts that the branch of the sympathetic enters the tympanum through a little foramen in the aqueduct of Fallopius.—On the other hand, M. H. F. Kilian, in an excellent work on the ninth pair of nerves,† states, as the result of dissections made for the purpose, that though a twig from the glosso-pharyngeal nerve does sometimes enter the tympanum, it is more frequently lost in the petrous part of the temporal bone, and never unites with the superficial branch of the vidian nerve; that the Fallopian fissure or foramen innominatum is always single, and never divided into three canals for receiving three divisions of the vidian nerve, as represented by Jacobson; and that no filaments from the sympathetic enter the tympanum, though some pass to the substance of the bone.—pp. 36-37.

M. Lobstein has himself found that a twig, arising either from the upper cervical ganglion, or from the sympathetic before the formation of the ganglion, enters a particular foramen situated in the first flexure of the carotic canal, and leading to a canal in the substance of the bone. The filament of the sympathetic, contained in this canal, suddenly divides into two diverging portions, of which the first, anterior to, and more slender than the other, penetrates into the cavity of the tympanum, runs over the promontory, and unites there with a twig detached from the petrous part of the vidian nerve; the second, somewhat larger, runs in an osseous canal to the posterior part of the tympanum, and also unites with a twig from the petrous part of the vidian nerve; by this union is formed a branch, which passes through a foramen close to the fossula of the glosso-pharyngeal nerve, and inosculates with that nerve.

"To make this description more intelligible," says M. Lobstein, "it is to be noted that all these branches run in osseous canals, hollowed out of the anterior, superior, posterior, and inferior parietes of the tympanum, except the branch of the sympathetic, running in a groove upon the promontory. Hence, if we begin at the canal re-

* Fragment. Descript. Nervor. Cardiac. in Ludwig. Scriptores Neurolog. Minores. Vol. 2.

† Anatomische Untersuchungüber das neunte Hirnnerven paar. Pesth, 4to. 1822.

ceiving the branch of the superficial part of the vidian nerve, we shall find that it enters the tympanum by one opening above the promontory; that then, proceeding backwards in a curved direction, it runs through the substance of the promontory near the fenestra rotunda, and subdivides into two little channels, of which the first terminates by a minute foramen in the carotic canal, and the second near the receptacle of the glosso-pharyngeal nerve, in the basis of the cranium."

Besides the confirmation given to the discovery of Jacobson, by M. Lobstein himself, he informs us in an appendix, that M. Ehrmann, Chief Anatomist in the University of Strasburgh, has also found that the ganglion of the glosso-pharyngeal nerve gives off a tolerably large branch, which enters a canal in the os petrosum by a foramen on its lower surface; this branch, on arriving at the promontory, divides into three portions, of which the first runs downwards towards the fenestra rotunda; the second ascends, and unites with the superficial, or petrous part of the vidian nerve; whilst the third runs forwards, passes out of the tympanum through the osseous septum into the carotic canal, and anastomoses with the nervous plexus surrounding the carotid artery.—In one subject, the ganglion of the glosso-pharyngeal nerve received a communicating branch from the superior cervical ganglion of the sympathetic. p. 168.

On the whole, we think that there is reason to believe in the existence of the anastomosis described by Professor Jacobson, although there is some little variation from the manner in which he supposed it to take place.

Interruptions of the Sympathetic.—Is the sympathetic nerve uniformly a continued trunk from the head to the pelvis, or are there occasional interruptions in its course? This question, interesting from anatomical considerations, is particularly so in a physiological point of view.—Haller* states that he once found the nerve interrupted at the sixth rib, the upper portion being continued from that point into the splanchnic nerve. This observation, which he confirmed, Bichât availed himself of in forming the hypothesis, that the ganglia of the sympathetic were distinct nervous centres. But Wrisberg† pronounced the observation of Haller to be an aberration from the natural structure; and by Weber,‡ its existence is considered as very doubtful.

M. Lobstein coincides with these authors, and remarks that the trunk of the nerve ocasionally appears to cease at the tenth intercostal space: but a more attentive examination will show, that in such a case, the lowest root of the splanchnic nerve, partially concealed in the body of the eleventh vertebra, is the true

* Elementa Physiologia. Tom. 4. † Commentaria Goetting. 1779, vol. 2.
‡ Anatomia Comp. Nervi Sympath. Leips. 1817.

continuation of the trunk; that it unites with a considerable branch from the spinal nerve lying between the eleventh and twelfth ribs, and afterwards takes its course into the abdomen. —pp. 38-9.

Among the more uncommon varieties of the sympathetic, is the superior splanchnic nerve found by Wrisberg, in eight subjects, arising from the cardiac plexus by three or four filaments, and entering the thorax with the œsophagus. It ran on the upper part of the bodies of the vertebræ, giving branches to the œsophagus, and either finished in the thorax, or entering the abdomen with the aorta, was lost in the solar plexus. This nerve, which no one but Wrisberg and Ludwig has found, was not reckoned as constant by the former, he having often sought it without success. M. Lobstein supposes that its occasional absence may, perhaps, explain why the heart does not sympathize with the abdominal viscera equally in all individuals.—p. 40.

M. Lobstein considers that Wrisberg has unnecessarily increased the number of plexuses; he has described pancreatic, duodenal, omental, cystic, umbilical plexuses, which either do not exist, or are merely a few filaments to the vessels of those parts.—p. 40.

M. Lobstein agrees with Walter,* that neither the pleura, pericardium, peritonæum, nor lymphatics, receive any ganglionic nerves: the lymphatic glands are occasionally perforated by some twigs which are distributed on other parts.—p. 41. Some branches of ganglionic nerves are however given to other parts besides the vascular system; many, for instance, to voluntary muscles, as the longus colli, intercostals, and diaphragm: some to the ligaments of the vertebræ, and even to the bones.

Relations of the Nerves to the Vessels.—The lymphatics and the Veins, except the branches of the vena porta, of the pulmonary veins near the heart, and the jugular, do not receive any nerves.† The nerves are connected in three ways with the arterial system.

1. The branches of nerves surround the larger arteries without adhering to them; thus the vertebral artery at its origin is embraced by numerous branches from the cardiac plexus, placed so thick and close together that they form a kind of membrane. Wrisberg‡ has improperly considered this structure in the light of a plexus. In the same manner the facial arteries are enveloped by nerves, which, however, do not enter their coats.

2. In by much the greater number of cases, the branches of

* Tabulæ Nervorum. Thor. et Abdom.

† Murray in Ludwig. T. 2. p. 247.

‡ Commentaria de Nerv. Artereas Venasque comitant. Sylloge Comment. Anat. Goetting. 1786. 4to.

nerves not only embrace the artery as ivy does a tree, but enter the organ with the branches of the vessel, become soft and pulpy, and vanish in the cellular coat, or are lost to the naked eye. Lucæ* has observed, and M. Lobstein confirms the observation, that in this respect there is no difference between the larger and smaller arteries.—p. 42.

"When these nerves," says he, "are examined with the microscope, they present a beautiful spectacle: the nervous filaments divide into numerous branches, closely applied to each other, and forming almost the whole of the cellular coat surrounding the artery. This structure I have frequently observed in the continuations of the nervi molles distributed upon the branches of the external carotid. The cellular texture covering the lingual and external maxillary arteries, when seen through a microscope magnifying sixty times, was a complete net-work of nerves, of a milky colour, and wholly different from the common cellular texture in the neighbourhood." "In a seven months fœtus," continues he, "I examined the nervus mollis running from the upper cervical ganglion to the external carotid, by means of a lens, and found it divide into seven white fasciculi, which were lost in innumerable filaments. Hence I consider it is beyond a doubt that a *nervous* cellular tissue exists, devoted to the arteries and nerves upon them, distinct from the common cellular tissue, particularly in displaying longitudinal fibrillæ of inconceivable subtility." —p. 42-43.

3. "Ostensum nondum est," says Behrends,† "nervorum surculos carnes arteriarum accessisse." The contrary has since been satisfactorily proved. M. Lobstein found two nerves arising from the superficial cardiac plexus on the right side, perforating the external coat of the arch of the aorta before the origin of the arteria innominata, and lost in the middle coat: in a fœtus he found a branch distributed to the fibrous coat of the aorta near the origin of the left subclavian. Walter has observed the same thing, and Lucæ has described and given drawings of filaments of nerves distributed on the middle coat of the tracheal artery.—pp. 44-5.

External and internal Branches.—The distinction between the external and internal branches of the sympathetic is evident and striking. The former never surround the vessels, and are sometimes found without any corresponding arteries, as the cervical and dorsal branches anastomose with the spinal nerves; they never divide into branches before their anastomoses. The internals, on the contrary, send off branches to the various organs, and uniformly accompany, surround, and adhere to the parietes of the arteries. Hence some, as Soemmering and

* Observations Anatomicæ quædem circa Nerv. Art. adeunt. et comitant Francof. ad Mœnum. 1810.

† Dissertatis Inaug. qua demonstratur cor nervis carere.

Behrends, have called the sympathetic the vascular nerve. The external branches have all the same colour, consistence, and general appearance: the internal, on the other hand, vary in different situations; in the carotic canal they are delicate, red, and flattened, rather than cylindric; in the upper part of the neck they are thick, red, soft, and pellucid; in the lower part they are slender and white. In the chest they have the same general nature, but in the abdomen there is infinite variety in their texture and appearance: the stomachic plexus differs from the hepatic, the branches of the former being white, shining, firm, and conical, while those of the latter are red, soft, and cylindrical. The splenic plexus is more like the stomachic, and both of them embrace the arteries without being very closely connected with them. The branches of the superior mesenteric, on the contrary, adhere so firmly to the artery and its divisions, that they can only be separated by force. This adhesion is less perfect in the inferior mesenteric plexus: and M. Lobstein states as a general rule, that the nervous branches are closely united to the trunk, and the principal divisions of the arteries which they accompany, adhering more closely to the inner ramifications, and running parallel with them. The renal plexus agrees with the hepatic in this, that its branches are soft, thick, red, and beset with ganglia, which are never found in the stomachic or splenic.—pp. 45-6.

Ganglia.—The ganglia themselves differ considerably: a principal one exists in each region; in the neck, the superior cervical; in the chest, the first thoracic; in the abdomen, the semilunar. The superior cervical is longer, softer, and redder than the rest. The semilunar ganglion is the most dense, and presents infinite varieties of shape.—p. 47. From his researches on the sympathetic nerve in the fœtus, M. Lobstein concludes that it exists in a distinct form; that it is thick, because of the proximity of the ganglia; that the ganglia are perfect, have their usual colour, and appear longer than in the adult, except the semilunar ganglion, which increases more slowly than the other parts of the ganglionic system.—p. 52.

In considering the structure of the sympathetic, M. Lobstein has given his reasons for considering it as a single nerve, stretching from the head to the pelvis. In an experience of twenty-four years he has never known it interrupted: by attentive examination, and the aid of maceration, he traced its fibres through the ganglia, in one instance from the first cervical to the fifth thoracic ganglion; in another, from the first thoracic to the second sacral ganglion. Like the cerebral and spinal nerves the sympathetic is composed of fibrillæ interwoven with each other in a plexiform manner. Such also is the case with the branches, although, according to Bichât, this structure exists

only in the branches of communication with the cerebral and spinal nerves. Scarpa* has stated the contrary, and M. Lobstein has fully proved it by giving representations of the splanchnic nerve and a branch of the hepatic plexus reduced to a plexiform state, by a separation of the fibres of which they are composed.—pp. 58-9. Tab. 3. and 5.—The branches of the mesenteric plexus alone form an exception, for even when examined through the microscope they present the appearance of simple cords without fibrillæ.

Structure of the Ganglia.—The ganglia possess two coverings, the one formed of a loose cellular tissue, the other of the same structure, but much more firm and dense. Under the coverings of the ganglion is found a soft, moist, ash-coloured substance, filling the spaces between the nervous fibres, and forming a tuberculated mass. By maceration this substance becomes flocculent, but never degenerates into cellular substance. According to Scarpa, the nerves entering the ganglia are so divided, and again unite in such a manner, that each nerve issuing out is composed of fibres from every nerve that enters. Wutzer, who has made the ganglia a subject of particular investigation,† distinguishes them into three kinds, cerebral, spinal, and those of the vegetative system. The latter are composed of two substances, the one medullary and white; the other pulpy, cellular, and of a cinereous red colour. The first has the same external and chemical characters as the medullary substance of other nerves. The second consists of a cellular structure containing innumerable minute vesicles, and surrounding the medullary substance in the ganglion.

M. Lobstein himself examined the composition of the ganglia, by macerating them in pure water in the manner recommended by Ruysch and Scarpa. He found in all the ganglia the gelatinous substance described by the latter. He afterwards, however, states that its occurrence is not constant, and that it cannot be considered as of the same nature with the cortical cerebral substance. He agrees with Wutzer in the opinion that the ganglia contain two substances, the one fibrous and arranged in a plexiform manner; the other flocculent and of a greyish colour. The superior cervical ganglion alone forms an exception, for even when examined by the microscope, after a month's maceration, it appeared homogeneous, being composed of innumerable, delicate, cotton-like threads, not collected into fasciculi. As a general fact it may be stated, that the larger the ganglia the less do they contain of the grey substance, and *vice versa*. This substance is also met with in the spinal ganglia.—pp. 65-6-7.

* Annotationes Academicæ.

† De corporus humani. Gangl. &c. Berol. 1817. 4to.

The ganglionic parenchyma has nothing in common with the substance of the brain; the latter is semi-fluid, is hardened by acids and alcohol, without being changed into a coriaceous substance; the former, on the contrary, is affected by those agents as the solid textures of the body, and acquires great density from their operation.—p. 67. By coction the ganglia are first hardened, and then become soft again. They are slowly acted on and dissolved by alkalies. They resist putrefaction longer than the cerebral nerves, and degenerate into adipocire.

The Plexuses.—The plexuses were considered by Scarpa to agree in function and office with the ganglia. This idea is to a certain degree confirmed by the examination of the spinal ganglia; those in the neck and upper part of the back are tubercles, whilst, as they proceed downwards, they become more open and distinct in their composition, so that the lumbar ganglia are in fact true plexuses.—p. 70.

"It is not to be doubted, however," says M. Lobstein, "that there are real differences. In the first place the mixture of fibres is much closer in the ganglia; secondly, they contain a semi-fluid secretion; and thirdly, there is the tomentous cinereous substance which does not exist in the plexuses."—p. 70.

It has been doubted whether there be true anastomosis, or only juxta-position of fibres in the plexuses. M. Lobstein decides for the former, principally from the analogy of particular nerves. In the loop of communication between the right vagus nerve and the solar plexus, he traced the filaments of the former without interruption into the latter, and *vice versa*, in such a manner that it was impossible to say where one began or the other ended.—p. 71. He has also observed the same fact in the smallest branches of the plexuses. Although the idea scarcely deserves a serious refutation, it is right to mention that M. Lobstein (if we may judge from his silence,) has not met with the branches of nerves of the sympathetic system which some individuals have persuaded themselves that they had discovered in the extremities.

Physiology of the Sympathetic.—It is evident that the less that is really known on any subject the more extensive is the field for hypothesis and difference of opinion. This remark is well exemplified by the physiology of the sympathetic system of nerves, which has often afforded scope for the exertion of fancy and supposition. It would be useless to recapitulate the opinions of Willis, Lancisi, Vieussens, Meckel, and others, ad infinitum, equally different from each other, and remote from truth. The hypothesis in which the ganglia are considered as little brains, or distinct centres of nervous influence, originated with Winslow and Johnstone, but received its most perfect de-

velopment from Bichât, and it must be allowed the merit of ingenuity, though the anatomical facts which form its groundwork are more than questionable. Scarpa assigned a use to them wholly mechanical, that of separating, mixing, and again uniting the nerves entering them. This explanation applies with reason and probability to the plexuses, but is manifestly inapplicable in the case of the ganglia. Reil* considers the ganglionic system as devoted to the organs of nutrition; as being connected with, but not originating from the cerebral system; as not possessing any common centre; as the medium of the influence of the mind on the organs of vegetative life; and as preventing the impressions on the internal organs from being constantly conveyed to the sensorium.

It would be tedious to follow M. Lobstein through the disquisitions which lead him to the following conclusions:—1. That the sympathetic nerve presides over the functions of nutrition and secretion; 2. That it regulates the action of the heart and the circulation of the blood; 3. That it forms a medium of connexion between the principal organs; 4. That through it, mental affections, &c. are conveyed to those organs; and 5. That it presides generally over the organs of nutrition and all their actions.—pp. 100-4-5-6-7.

These opinions coincide very nearly with those generally entertained, although they appear to us extremely doubtful.—How can it be supposed that nutrition, secretion, and the circulation of fluids should, in animals, stand in the relation of effects to the nerves, whether ganglionic or cerebro-spinal, when we observe them to be effected, in other instances, without the intervention of the supposed cause? Where can we find nutrition more perfect, secretion more exquisite or more varied, or circulation (that is, motion of fluids by vital action) more vigorous than in vegetables, in which even those who have hypotheses to support, hesitate to suppose the existence of any thing comparable to a nervous system? Linnæus, indeed, made the pith of vegetables a subject of comparison with it, but the opinion never had any foundation in truth, and has long been rejected. In short, although the nervous system exercises a powerful influence over the organs of vegetative life, every argument drawn from observation and analogy, tends to prove that it has no claim to be considered as the cause of the functions which they perform.

Animal Magnetism.—On the subject of animal magnetism, we cannot resist the temptation of quoting a remark of M. Lobstein's, from its close agreement with what we have said on a similar occasion.—(*Quart. Jour. For. Med.* Vol. 4, p. 7.)

* Archiv. für die Physiologie; B. 7.

"Non rejiciendas esse censeo observationes, quæ virium naturæ humanæ occultarum declarare videntur existentiam; atque dedecet, meo arbitrio, medicum philosophum aspernari phænomena absque prævia indagine et propter unicam rationem, quod obscuritate sint tecta, et non quadrent cum receptis principiis ac vulgaribus notionibus."—p. 114.

In speaking of the functions of the ganglionic system of nerves, M. Lobstein has not taken any notice of the influence which they have been supposed to exert on the production of animal heat.—(*Vide Quart. Jour. For. Med.* Vol. 3, p. 499, &c.) The omission is singular, and we are unable even to guess the cause.

Pathology of the Sympathetic.—If we had some doubts as to the correctness of the physiology of the sympathetic system of nerves, usually admitted, we are still more sceptical as to the supposed proofs of its influence in producing the phenomena of disease. We do not deny its powers in this respect, but merely that any distinct and well known train of symptoms can be referred to the affections of the sympathetic and its ganglia, except upon the most hypothetical and imaginary grounds. We are sorry to differ on this point from M. Lobstein, who, with a very excusable eagerness, has laboured to exalt the importance of that nerve in the production of disease. To various dynamic affections of it he ascribes the occurrence of hypochondriasis, hysteria, mania, colica pictonum, convulsive cough, angina pectoris, incubus, latent gout, intermittent fever, &c.—A moderate acquaintance with the general principles of pathology, would authorize us to reject such an explanation, as applied to the greater number of the diseases in question, unsupported as the opinion is, by the evidence of fact and of dissection. The true seat and nature of hypochondriasis and hysteria are too well known, to render it necessary to refer for their explanation to the morbid actions of a system, of which our knowledge is too inconsiderable. The case is different with some of the other diseases: colica pictonum, in particular, presents some very singular, and not easily to be explained, phenomena, and we would suggest to those who may be favoured with convenient opportunities, that it might, perhaps, well repay their trouble to examine in those who die from this disease, the state of the spinal cord, its nerves, and the ganglionic system.

It would have been better had M. Lobstein confined himself to the changes of structure taking place in the sympathetic, though, even in this case, it is by no means easy to succeed in connecting the symptoms, during life, with the appearances after death.

Inflammation of the Ganglia.—As an instance of inflammation of the semilunar ganglia, he gives the following case:—A

female, who from the time of puberty had suffered from hypochondriacal symptoms, and had been twice attacked by incomplete apoplexy, leaving partial paralysis in the right side of the face, was married in her 42d year. In fifteen months she became pregnant, and from the second week suffered from obstinate vomiting, even more than thirty times a day, which resisted all remedies. From the frequent vomiting the fauces became inflamed and gangrenous, emitting a fœtid odour. Her fingers, from being sometimes applied to the mouth, were even eroded. But the most urgent symptom was a burning pain near the spinal column, and in the lower part of the right hypochondrium, only to be relieved by dry friction, first with the hand, and then with a brush, to such an extent as at last to abrade the cuticle. She died in a state of marasmus.

Dissection.—Forty-eight hours after death, M. Lobstein examined the body. The cranium appeared smaller than natural, although there had been no deficiency of intellect. No disease could be detected in the brain, although she had long suffered from obstinate headache and delirium. The organs of the chest, the stomach, intestines, and urinary organs, were free from disease. The uterus presented some fibrous tumours in its substance. M. Lobstein removed the semilunar ganglia, and examined them attentively; they were not changed in texture, but were of an intensely red colour, which, by himself and other able anatomists, was considered as the result of inflammation.—This colour was so deep as to be scarcely diminished at the end of three days maceration. M. Lobstein has given a coloured engraving of the parts.—pp. 146-7-8. tab. 7.

Case 2d.—In a child of six years, who died of convulsive cough, he found all the left side of the solar plexus inflamed, the right remaining unchanged. After some days maceration, although the inflammatory redness had disappeared, a yellow appearance remained, proving the existence of organic change. —p. 150. tab. 8.

M. Autenrieth, of Tubingen, in a similar case, found the vagus nerve inflamed in its whole course through the thorax. The neurilema was painted with blood-vessels, and the pulp had a dull red tinge. The cardiac and sympathetic nerves in the thorax were also somewhat affected. The same author states that he found the nerves of the abdomen changed in structure, in a man who died of typhus; which, however, M. Lobstein has not been able to confirm.

Dr. Aronssohn, of Strasburg, communicated the following cases to the author:—A man, aged 47, entered the hospital for the purpose of having a tumour removed from the back, which had reappeared after a former operation. He was seized with shivering, trismus, and opisthotonos, of which he died in two

days. On dissection were found:—1. A vascular net-work on the surface of the spinal cord with serous effusion. 2. An evident inflammation of the semilunar ganglia.

Case 2d.—A woman, aged 36, suffered from vomiting during the whole of her second pregnancy, subsequently relieved by the appearance of herpes on the breast and arms. This was followed by swelling of the left knee, diarrhœa, vomiting, hectic fever, and death. Dissection showed inflammation and thickening of the mucous membrane of the stomach near the pylorus, and inflammation of the semilunar ganglia.—p. 152.

Our limits do not permit us to transcribe other cases of the same general description related by the author. One remark is applicable to all of them; that they presented nothing in their symptoms which could lead to a discrimination of the seat of disease, confirming the remarks we have already made on the obvious fallacies arising (in the present state of our knowledge at least) from any attempt to introduce this system of nerves into reasonings on points of pathology, or in leading to any practical principle of the least importance. For this reason, we think farther detail useless.

The plates, partly from copper, and partly stone, are ten in number, representing:—1. The sympathetic and its branches in the carotic canal. 2. The trunk of the nerve, from the first cervical to the fourth thoracic ganglion, showing the continuation of the fibres through the ganglia. 3. The semilunar ganglion of one side to display its texture. 4. The vessels of ganglia. 5. and 6. Nerves of the sympathetic system separated into distinct fibres, to show the plexiform arrangement possessed by them, in common with the cerebral nerves. 7. 8. 9. 10. Various instances of changes of structure in the par vagum, and in the nerves and ganglia of the sympathetic system.

Anatomisk Beskrivelse over et ved Nogle Dyr-Arters Uterus Undersögt Glandulöst Organ, &c.

An Anatomical Description of a Glandular Organ observed in the Uterus of some of the Lower Animals. By H. Gartner, M. D. Military Surgeon, Member of the Royal Medical Societies of Copenhagen and Edinburgh. Copenhagen, 1822.

(From the Edinburgh Medical and Surgical Journal for April, 1824.)

Of all the animal functions, none has given rise to so many theories, or caused so many discussions, as the function of generation. Notwithstanding, however, the laborious researches which this portion of the animal economy has occasioned, few

parts of physiology are less understood. Theories have succeeded theories; each has had its admirers and defenders, and each has successively sunk into oblivion to give place to the reigning favourite of the day. That the female, as well as the male, secreted a seminal fluid, is a very ancient doctrine, and one which, after having been long and keenly contested, has now fallen into discredit.

According to the theory of Hippocrates and Galen, the female semen secreted in the ovaries, or, as they were styled, until the period of Steno, the female testicles, passing through a duct on each side into the uterus, was there mixed with the male semen, and formed the rudiments of the fœtus. The observations of Harvey and Malpighi, together with the discovery of the Graafian vesicles, or ova, in the ovaries, overturned the system of the ancients, and destroyed the belief in the female semen. Caspar Bartholine, however, described a body resembling the prostate gland of the male, which he discovered under the crura of the clitoris, and De Graaf mentioned a glandular substance that surrounded the urethra, and opened into the vagina. From these a fluid, resembling the secretion of the prostate gland, was thought to be produced, and thrown out during the venereal act.

Later anatomists seem to have lost sight of this part of the apparatus of generation, and have confined the business entirely to the impregnation of the ova, and their transmission into the uterus, through the influence either of the semen itself, or of a peculiar exhalation, to which the name of *Aura Seminalis* has been given. Any fluid, which may be produced in the act of generation, is considered, according to this theory, as being formed by the mucous follicles of the vagina.

Some researches have lately been made into the anatomy of these parts in some of the lower animals, which, if confirmed in the human subject, may contribute to throw some light on this obscure part of the animal system.

Dr. Gartner, an ingenious and zealous anatomist and practitioner in Copenhagen, has lately obtained an honorary medal from the Royal Society of Sciences of that city, for a discovery in the genital parts of the cow and the sow. This discovery was announced in our Journal some time ago; and we then promised to recur to it as soon as we should receive a description on which we could rely. As Dr. Gartner has lately printed an essay on the subject in the Danish language, we shall endeavour, for the benefit of our readers, to compress into a short compass the information which it contains.

The author was engaged in an investigation of the lymphatics on the uterus of the cow, when, by accident, he discovered a canal full of a clear, yellowish fluid. From its appearance, he

was convinced that it was neither a blood-vessel nor absorbent; and upon cutting into it, he found that he could inflate it both above and below the opening. Upon further investigation, he found that traces of the canal could be seen to within an inch of the ovary, and that, on following it downwards, it opened beside the orifice of the urethra. Having experienced some difficulty in fully developing the organ in the cow, he proceeded to search for a similar part in the sow. Here his researches were immediately crowned with success.

"The sow has a double uterus, without any neck, properly so called. That part, however, of the vagina which lies nearest the place where the uterus is divided, has prominences within on the one side, which fit into corresponding depressions on the other, and in this manner shut up the openings into the uterus. The vagina is somewhat long, and has a round figure, though a little flattened on each side. The urethra opens into it about two inches from the external parts of generation."

The first uterus which the author examined, was that of a sow three years old. Upon the paries of the vagina, which adjoins the bladder, the author felt a round, hard body, somewhat like an artery to the touch. This he opened and dissected, upwards, and for some inches he found it to be a single canal. By degrees, however, it branched out into a body that had the appearance of a gland, and resembled very much the pancreas. After giving out branches to this body for about two inches, it became again a single canal, though very minute, and stretched towards the uterus, or rather cornu of the uterus, as the uterus of the sow is destitute of a body. In order to see how this duct opened into the vagina, the author injected quicksilver through a part of it, which he had left unopened, and which lay hid under the muscle of the bladder. The mercury passed into the vagina, and he perceived that the duct terminated in a small opening close beside the orifice of the urethra.

"I have," says the author, "examined many uteri, in a pregnant as well as unimpregnated state, and the uteri of those animals that had been deprived of their ovaries, and I have generally found the same result, namely, a canal which begins on each side of the place, where the vagina terminates in the cornua uteri, passes through a glandular body in the middle of the vagina, goes under the sphincter vesicæ, and perforates the vagina close beside the orifice of the urethra."

A similar duct was found on the other side of the vagina, which followed exactly the same course as the one above mentioned.

Dr. Gartner was sometimes able to trace the duct much further than is here described; he has even succeeded in follow-

ing it to within an inch or two of the ovaries. In general, however, it could not be distinctly traced further than the place where the vagina terminates in the uterus. In these cases, however, small knobs or glands were seen in the tract of the duct.

The author contrived, though not without difficulty, to inject the whole canal with quicksilver.

"Before the canal is injected with mercury, it has a white and compact appearance, and seems to be about as thick as the barrel of a pen. When filled with mercury, it appears less compact, and becomes twice as large in diameter. Upon cutting into it, it has somewhat the appearance of a *vas deferens*, though not quite so compact in substance, or, if I may use the expression, so cartilaginous." p. 15.

The organ is much more complicated in the cow, and the author accordingly experienced greater difficulty in developing it. The uterus of the cow is distinguished by a long and thick neck, and two horns that proceed from the body, and terminate in the Fallopian tubes. As far as we have been able to discover from the description before us, assisted by the plates, the organ in the cow consists of three parts.

1. A duct on each side of the vagina, which, beginning by a small orifice near the mouth of the urethra, immediately expands into a *capitulum* or sac, large enough to admit the point of the finger. This part differs altogether in structure from the rest of the canal, for its inner surface is smooth and polished, and its outer is fibrous and somewhat muscular, while the inner surface of the rest of the duct is composed of a mucous membrane, the outer consisting of the common cellular substance. From this part the canal runs on the paries of the vagina next the bladder, and terminates about an inch from the os uteri in a *cul de sac*, which communicates by a valvular or cribriform opening, with the canal that begins at this part.

2. A number of follicles or cysts, on which numerous blood-vessels are ramified. These cells are generally full of a viscid fluid. Sometimes little glandular knobs are found mixed with them, and sometimes hydatids are found adhering. In a cow 16 years old, Dr. Gartner found on one side a canal of a spiral form, and on the other a number of cells, under and among which ran the duct. The cells were nearly as hard as cartilage, and large enough to admit the point of the finger.

3. Under and among the cells, a canal is observed, at first of a tortuous or spiral form, which, running along the neck of the uterus, follows the curve of its horn, upon which it extends to within an inch of the ovary. This canal in the cow is pervious, from its beginning, to the place where it turns towards

the cornu uteri. It can, however, be traced to within an inch of the ovary.

It is always a matter of some difficulty to describe an anatomical structure without referring to plates; we hope, however, that our readers will understand the description now given.

The author, with great candour, confesses that some of the older anatomists have partly described this organ; he even refers to the different authors that have mentioned it. We have taken some trouble in tracing the germs of this discovery in the older authors, and we have found that, with the exception of Malpighi, the accounts which they give are so contradictory, and the description of the part so confused, that little is to be made of them. Malpighi, however, in his letter to Sponius, has given a very clear description of the duct in the cow, from its opening in the vagina to near the curve of the cornu uteri; but beyond this, he does not appear to have traced it. He also, in some measure, describes the follicles and cysts mentioned by Dr. Gartner.

Upon the whole, therefore, although this cannot be considered altogether as an original discovery, we think that the author is entitled to the praise of having given a clearer description of the part than has yet appeared, and of having followed the anatomical investigation further than has hitherto been done. The medical world is also, in our opinion, much indebted to him for having revived the memory of investigations, which, if pushed to their full extent, may yet lead to important views in physiology. It cannot however be doubted, that much remains to be done before we can come to any certain conclusions.

Franz Daniel Reisseisen, uber den Bau der Lungen, &c. Berlin, lei August Rucker. 1822.

Francisci Danielis Reisseisen Medicinae Doctoris Argentoratensis de Fabrica Pulmonum Commentatio a Regia Academia Scientiarum Berolinensi Praemio Ornata. Latine expressit Justus Fredericus Carolus Hecker, Medic. Utr. Doctor in Universitate Litteraria Berolinensi privatim docens. Cum Tabulis VI. aeri et coloratis. Berolini, apud Augustum Rucker. 1822.

Memoire sur la Structure du Poumon de l'Homme, &c. &c. Par M. MAGENDIE, Journal de Physiologie Exper. Tom. I.

(From the same.)

In the year 1808 the Royal Academy of Sciences at Berlin bestowed its prize on Francis Daniel Reisseisen of Strasburg,

for an essay on the structure of the lungs. In consequence of the unsettled state of public affairs, it was impracticable to publish engravings of the drawings which then accompanied this essay; but as soon as this was possible, the Academy delegated to Rudolphi the task of preparing for publication, engravings of those anatomical preparations which were requisite to explain the researches of the author. Various obstacles, however, appear to have delayed the editor or the artist, and it was only in the summer of 1822, that the work appeared in the form in which we now find it. The commentary was originally written in the German language; at present the original is accompanied with a Latin translation by Justus Frederic Charles Hecker, a private medical teacher in the University of Berlin. It consists of 26 pages large folio letter-press, most beautifully printed on excellent imperial paper, and is accompanied with six copper-plate coloured engravings of the objects demonstrated by the author. The execution of these engravings is distinguished by that delicacy of delineation and colouring which characterize the anatomical engravings of the foreign artists, and in which, whatever advantage British artists possess over them in engraving other subjects, they have long been pre-eminent. The researches of Reisseisen cannot be said to have added much to the sum of anatomical knowledge, nor to have unfolded many facts, which might be termed discoveries; but they have shown more positively than formerly, what is known and what is not known, what is certain and what is doubtful, in our knowledge of the pulmonic structure, and have placed its peculiarities in a clearer light than formerly. Reisseisen, indeed, himself disclaims the prospect of actual discovery, and limits the qualifications of a prize-essay to more moderate though perhaps not less useful purposes.

"I only avail myself," says he, "of a suitable occasion of submitting to the judgment of the Academy certain researches on the structure of the lungs, which have been conducted by me for several years; for I trusted that this would throw light on some doubtful points. I did not regard it as expedient to comprehend in my commentary, points which were the subject either of discovery or of discussion. For the Academy are aware of the state of anatomical inquiry, and in proposing a public question, have chiefly in view to determine what is doubtful, to throw light on what is obscure, and to fill up chasms in the literature of the subject, that they may be progressively and steadily carried to expected perfection. The Academy, therefore, require that the questions proposed by them be examined with the utmost care; and that the proofs of their answers, be without omission brought forward, supported on experiments which deserve credit and are fairly narrated. In writing this Commentary, therefore, I have followed my own dissections only, and have adduced no experiments

of other inquirers, unless they were supported and confirmed by my own."

That our readers, however, may form their own judgment, we shall restrict our account of this work to a simple detail of the author's researches and conclusions, in the same order, as nearly as possible, in which he has himself delivered them. Any observations of our own shall be reserved to the conclusion of this article.

The questions proposed by the Academy, with the view of obtaining satisfactory information on the structure and organization of the lungs, are five in number, and are stated in the following order.

1. How, and where does the cartilaginous tube (of the windpipe) terminate? Does it pass into the pulmonic cellular (filamentous) tissue, and assume its nature; or have its cartilaginous tubes certain limits? Or is it continued into the cellular tissue in such manner that it retains its cartilaginous character even in the extremities, or not?

2. Do the bronchial vessels pertain to the cartilaginous breath-tubes exclusively, or to the pulmonic cellular tissue also; do they nourish the former only, or the latter at the same time?

3. What are the terminations of the pulmonary artery? Do they convey blood, through the medium of the cellular substance, through the lungs only, to be returned entirely by the pulmonary veins; or do they exhale into the cellular tissue a vapoury fluid, to be discharged by expiration, and do they discharge also a vapour on the outer surface of the lungs, or not?

4. What are the origins of the pulmonary veins? Do they rise from arteries only, or from the breath-tubes, the cellular substance and outer surface also of the lungs performing the function of absorbing vessels?

5. How do the branches of the 8th pair (pneumo-gastric nerve) and intercostal nerve terminate? Does the bronchial plexus issuing from the 8th pair terminate in the bronchial membrane only? or is it distributed in the cellular substance also? Is the 8th pair united with the twigs of the cardiac plexus, which proceed from the intercostal nerve to the minutest vessels of the lungs?

I. To determine the first question, the extent and disposition of the bronchial tubes, and of the membranous surface in which they terminate, are examined in various modes. The bronchial tube and the several branches into which it divaricates is cut open and traced as far as the scalpel can follow them. The author justly describes this surface as formed by a mucous membrane, smooth, very delicate, dense, and impermeable to air, which commencing in the throat or jaws (fauces), forms a canal every where shut, at first single, afterwards dividing as it

descends into more numerous branches, each of which is distributed through the lung in such manner, that, after forming a manifold partition, it terminates in blind or unopen extremities, while, at the same time, the capacity of the lower branches decreases in the proportion of their increasing number and smallness.

From this simple inspection, it may, according to our author, be easily concluded, that the individual vesicles or breath-cells on the surface of the lungs are the blind or shut ends of the extreme tubes; and that these, distributed in great number, constitute that mass which, spongy as it is, appeared to many anatomists a cellular structure. That this is an erroneous opinion, he infers from the following experiments.

1. Let a bronchial tube of the lobule of a calf's lung be accurately inclosed in a ligature, which is to be drawn tight after the whole lung has been inflated by the windpipe. The result is, that the whole lower part, consisting of bronchial tubes arising below the ligature, will retain the air most steadily, while the upper will collapse as the air gradually escapes,—an event which may be accelerated by incisions in various parts of the lung. Now, if the pulmonic tissue really resembled that of cellular structure, the free communication between one cell and another would gradually occasion the escape of the air from the inflated portion and its consequent collapse.

2. A quantity of quicksilver poured through a tube similarly tied into its minuter divisions, does not escape from the tied portion, into any other part of the organ, nor even by its gravity does it find its way into other empty lobules, though it is placed uppermost, or aided by slight pressure.

In answer to an objection which might be urged, that the lobules, or portions of lung supplied by individual bronchial tubes, may be separated from each other by membranous envelopes, Reisseisen replies, that such envelopes do not exist, and that all the parts of the lung being mutually united by cellular (filamentous) tissue, in which the vessels run, are retained in their position, and each lobule is united to the contiguous ones by its interposition.

3. The cellular or filamentous web of the lungs is very differently affected from the bronchial terminations, by experiments of this kind; for air blown into it by a small incision of the pulmonic pleura, between two lobules, will be slowly dissipated, and will spread gradually under it through their interstices, at one time by filling small unequal cells, at another, larger cavities; nor can it be equally squeezed out, when the inflation is interrupted, but resembles a true emphysema.

These arguments the author regards as sufficient to show the nature of what is named the pulmonic parenchyme, and to re-

fute the opinion that it is merely cellular tissue collected into small masses. He censures particularly the experiments of Helvetius, who examined the lungs after being distended with wax, or inflated, or even dried, when it is obvious that the smallest air-tubes can neither be examined in a mould of wax, and that, when dried and distended, they must be less easily seen by the eyes. On the observation of this author, also, that the lungs cut in various directions exhibited cells of uncertain shape—larger and smaller, he justly remarks, that the air-tubes cut variously by such sections must give, in different parts, circular or oval sections, larger or smaller ones, according as a larger or smaller tube is divided transversely or obliquely. To show the peculiarities of these tubes, the following directions are to be observed.

Let a pulmonic lobule be taken in the human subject from the acute margin, where the lobules are so extenuated that their uttermost ones are single, and in the lower animals from the slender appendiciform lobes; pour quicksilver into its bronchial tube, and, laying it on a level surface, urge the metal forward till it is felt in the uttermost margin of the lobe. The columns of quicksilver may then be distinguished, by means of a simple magnifying glass, proceeding into minute tubes, which grow sensible, slender, and so much shorter as they are more remote from the upper partitions, but increasing in number and density until the quicksilver at the margin is reduced to halved globules, projecting under the pleura. The result of this experiment is shown in the first figure of the second engraving.

This structure will be still more clearly demonstrated by intercepting a lobule of the same kind between two glass plates, and submitting it to the microscope. The plates must be compressed to such extent, that the quicksilver, repelled by the residual air, may be forced into the uttermost terminations of the tubes. It will thus appear, 1*st*, that the small canals are divided into branches, even to the uttermost edge, in a certain definite order, which is most uniformly observed, and that the calibre of these tubes decreases as this branching goes on; 2*d*, that the division into minute branches (*ramuli*) becomes at the end so much more frequent as each sends forth, from all parts, new branches, which, when filled with quicksilver, have the appearance of little knots (*noduli*); and, *lastly*, that their terminations become so short, that they have the appearance of halved globules, like the stalks or stems of a cluster of colewort. This is represented in the fourth figure of the second engraving.

To obviate any objection arising from the distention of the delicate pulmonic tissue by the weight of the quicksilver, and the optical illusion thence resulting, our author instituted another

experiment. A very recent lung, removed from a tender animal, (that of the calf, he thinks, is best,) he ordered to be submersed in water and set aside. After several days, when it had well collapsed by the escape of the air, though some lobules still retained a little, it was covered with warm water, with the intention of rarifying the air, and thus distending the canals in which the air was still contained. When a small column of air was urged, by the aid of the scalpel, to the utmost terminations, the same distribution as formerly appeared, unless that the tubes being less stretched, resemble more exact cylinders. (2d. and 5th figures of 2d engraving.) It is further easily perceived, that the minute canals continued to the end terminated in blind extremities of pulmonary vesicles, by submitting each lobule between glass plates to the microscope, in such manner that it may be transparent by the reflecting plate, and that, on occasional slight agitation, the air may be urged at one time forward, at another into lateral branches. Nor can the form of these vesicles cause them to be mistaken either for distended sacs, or globular bells attached to the ends of the canals, as their compass or circumference most evidently bears the same relation to the small branches from which they issue, as that of the branches does to the trunk.

These experiments, Reisseisen thinks, show abundantly, that the breath passages of the lungs are tapering canals, blind (cæci), or shut at their extremities, membranous, or consisting of the mucous coat of the windpipe, which is obviously impermeable to air;—by which he evidently understands, that air, though admitted into these canals, does not pass through the pulmonary mucous membrane into the subjacent tissue. That such structure of canals, however, be fitted to receive and return the air, and follow readily the motions of the chest, he conceives it to require support, in order to continue pervious, —and general mobility, so that at one time it may be lengthened, at another time shortened, and its diameter may be enlarged or diminished as need requires. This purpose, he conceives, is accomplished in three modes.

1. The cartilaginous structure of the windpipe is well known to be most useful in retaining that tube constantly open; and when the bronchial tubes penetrate the pulmonic substance, they continue to be supported by cartilages, which, though not in the annular form, suffice to prevent the tubes from being compressed, and their cavity obliterated; and as these cartilaginous plates become thinner and fewer as the bronchial tubes become more narrow and slender, they are found only in the form of halved rings, where the small branches divide; and even this arrangement cannot be traced in tubes of half a line in diameter.

2. Wherever the bronchial tubes are embraced by cartilagi-

nous rings, muscular fibres are connected with both extremities of each cartilage. But where the cartilages lose their annular figure, the whole circumference of the canals are enclosed by muscular fibres, inserted into the cartilaginous plates, in such manner that they partly rise above them; nor do they end where the canals are destitute of cartilages, but may be traced by means of a lens, though much smaller, as far as the bronchial tubes can be opened with the knife, principally in the lungs of robust and well-grown subjects. That these muscular fibres are continued to the ends of the bronchial tubes, our author infers from their uninterrupted course to the extremity,—from the necessity of a contractile agent, at once in the large tubes and in their minutest extremities,—and from the experiments of Warner,* in which not only irritating fluids or vapours, but even mechanical agents, applied to their extreme surface were followed by constriction, which, he conceives, could depend on the contraction of muscular fibres only.

3. Reisseisen further states, that the air tubes are provided with peculiar fibres, which have the faculty of shortening these tubes when stretched. He first remarks, that the ligamentous texture with which the bronchial cartilages are covered, in consequence of its elasticity, possesses this property in an eminent degree; and then proceeds to show, that the proper fibres to which he more particularly alludes, form a whitish elastic tissue, situate at the posterior part of the mucous tunic. In the larynx, he observes, it is possible to perceive through the mucous membrane whitish shining fibres, which, collected into bundles, descend backward into the windpipe, where they are perpendicular to the cartilages, and behind, where these are wanting, being gathered into bundles, they are so connected with the muscular layer, that they allow its fibres to be seen through them. (Tab. 1. *b.*) Where the windpipe divides into *bronchi* they are crowded more closely, and raise the mucous tunic into folds, with which they are continuous. (Tab. 1. *a.*) Lastly, where the cartilages cease to appear, arranged along the whole compass of the tubes like bridles, they run to the remotest ends of the small branches. In the human subject, they are so small that they can scarcely be traced in the minute breath canals; but in the lower animals, as they are much firmer and whiter, and more abundantly interwoven with the tubes, they are easily distinguished in the smallest branches, any one of which submitted to the microscope presents the same structure evidently as the largest. Other observations further show, that these elastic fibres are continued to the bronchial extremities; for a lung taken from a recent carcase is still filled and distend-

* Mem. de la Societé Roy. de Medec. ann. 1779, p. 394.

ed with air, but soon discharges it gradually, while the air-tubes collapse. Any fluid also, injected into the wind-pipe, flows out in an uninterrupted stream; and even when a mass of wax is impelled into the pulmonic vessels, part of it escaping into the air-tubes speedily flows into the wind-pipe mixed with air. These results Reisseisen ascribes to the elastic power of these whitish fibres, as the muscular property cannot have any operation after death.

On the nature of this tissue, our author has not made up his mind. He does not regard them as purely aponeurotic, as they do not present the character of this tissue, especially in the human subject; and they are woven with such a multitude of minute arteries, that in lungs properly injected with wax, especially if the bronchial tubes (*bronchia*) be slightly inflamed, they are not whitish, as might be expected, but actually red. Their arterial structure is also easily seen by the aid of the microscope. They appear, therefore, to be a peculiar kind of fibres, to be classed with the muscular or fibrous (proper) tunic of arteries, and the structure of the human womb.

They are so thoroughly interwoven with the mucous membrane, that they were described by the early anatomists as peculiarly pertaining to it; they may be detached from it, however, by careful dissection, as Helvetius showed in his Memoir.

From these several observations and experiments our author draws the following inferences:

1*st*, The pulmonic breath-tube or wind-pipe, is divided into branches, which decrease in diameter and increase in number in a fixed and uniform ratio, till they terminate in extremities which are shut, and rounded.

2*d*, It has no communication with the pulmonic cellular tissue, nor does it assume its nature; but retains its peculiar structure to the uttermost terminations, by which being shut it resembles air cells, or air vessels.

3*d*, It continues cartilaginous only as far as the delicacy of its structure admits a cartilage; it afterwards becomes membranous.

II. To determine the extent and distribution of the arteries termed bronchial, our author employs sundry arguments derived from examination of these vessels, aided by the microscope, dissection, and injection. As these arteries, though they go to all parts of the lung, are however most easily observed in the neighbourhood of the bronchial tubes, he proceeds to trace the bronchial branches to their terminations, and then to examine the lateral twigs which go to the other parts.

After the trunks of the bronchial arteries have encircled these tubes variously, they give to each individual branch small arteries, which accompany them to their extremities, where they

are so extenuated, that it is rarely possible to propel the colouring matter into them, and the microscope generally shows it stagnating not far from the extreme vesicles. (Tab. III. 1.) Often by means of anastomosing vessels subsequently to be noticed, the colouring matter is urged into the pulmonary arteries;—the ends of which being filled, may impose on the inexperienced observer, unless the distribution into branches like a tree, and their greater diameter showed them to be pulmonary vessels.

From these trunks issue numerous small branches (*ramuli*) which, after various circuitous turns, sometimes near, sometimes more remote from their origin, penetrate the fibrous sheath of the bronchial tubes, advance somewhat through it, at length enter the mucous membrane, in which they branch into an incredible multitude of capillary vessels. In a lung which is either inflamed or well injected with red matter, the inner (mucous) surface of the bronchial tubes appears entirely red to the anassisted eye. Our author always found this very thick net of vessels to lie along the elastic fibrous substance above described, while the corresponding veins pursued rather a transverse course according to the direction of the muscular fibres.

Beside the bronchial branches and many lateral tubes, the bronchial arteries send vessels to the other parts of the lungs. For, previous to the connexion of the bronchial tubes with the pulmonic tissue, they give off considerable branches, which running beneath the pleura in notches of the lungs, give out on each side many twigs, which carried here and there, and variously bent, finally pass into a net of capillary vessels to be afterwards described. Similar branches of the bronchial artery variously distributed in the intervals of the pulmonary lobules, pour fluid into the filamentous tissue, until produced to the surface they also terminate in the same vascular net-work.

Lastly, some twigs go to the bronchial glands, others to the coats of the pulmonary vessels, and a third set to the pulmonary nerves.

The vascular net-work already mentioned, appears to our author to consist of innumerable capillary vessels with common orifices, mutually interwoven, and embraces the whole surface of the cellular or filamentous tissue of the lung. Notwithstanding this mode of formation, it cannot be seen by the mere eye in healthy lungs, nor in opening living animals,—in which it must be expected to contain as much blood as is proper to it,—are injections capable of showing them, unless the matter used be of the most delicate nature. It is in the state of inflammation only that Reisseisen has observed these vessels with any facility, and he therefore recommends their demonstration to be attempted in inflamed lungs only.

The vessels of which it consists, are derived from three sources; 1. small branches (*ramuli*) of the bronchial artery, with occasional accessions from the pharyngeal; 2. small branches of the pulmonary artery; 3. small branches of the pulmonary vein. From the network thus formed, proceed exhaling vessels, by the fluid from which the pulmonic pleura is kept moist. This he conceives to be established by the ordinary experiment of injecting warm water by the pulmonary veins, from the larger branches of which it quickly escapes, and moistens the surface of the lungs.

When coloured matter is injected into this network, the colouring matter is left in the vessels, while the colourless fluid escapes to the surface. Isinglass, on the other hand, when injected in the same manner, penetrates the minute passages (pores) as it were drop by drop; and is soon after distinguished in the form of an infinite multitude of minute points (*punctula*) dispersed over the whole surface of the membrane.

From these results our author infers that this vascular network is chiefly appropriated to the process of exhalation; and that the orifices by which the exhaled fluids are prepared, belong to this set of vessels. For though the pulmonary vessels are well injected, the surface of the lungs (pleura) will never be moistened, unless the fluid passes into the vascular network; and when thick fluid (*humor crassior*—lymph or serum?) is effused between the lungs and pleura by inflammation, the minute vessels of the net are reddened with adventitious blood, and give forth vessels to form what are called false membranes.

The veins, by which the blood of the bronchial arteries is returned to the venous trunks, present an anomaly, which, in the opinion of our author, has been hitherto either utterly disregarded, or looked on as an exception to the general principles observed in the arrangement of the mechanical instruments of circulation. He alludes to the well known fact, that all the small veins, which correspond to the bronchial arteries in the greatest part of the lung, do not unite to form corresponding venous trunks, but terminate in the pulmonary vein through its entire course. The general arrangement is observed in a small extent only of the organ;—in that part of the bronchial tubes which is contiguous to the root or entrance of the large blood-vessels, and in part of the superficial network. The minute veins of this part unite into a common but very small trunk, termed the bronchial vein, which terminates either in the azygous vein, or in some adjoining branch of the large vein (vena cava), or in that venous trunk itself.

Similar small veins described by Gunz, derived from the vascular net, terminate at the back part of the lung, in the lower intercostal and the œsophageal veins. In the other more

remote parts of the organ, however, all of them are received by the pulmonary vein, not by anastomosis as might be imagined, but by direct passage or entrance.

When matter of different colour, therefore, is injected at the same time into the bronchial artery and pulmonary vein, not only the inner surface of the bronchial tubes, but the vascular network also is found to be tinged with both matters, and the roots of the minute veins may be seen inserted into the branches of the pulmonary vein. This is most distinct in the thin margins of the pulmonary lobules, where the pulmonary veins advance to the outer surface, and evidently receive the small veins issuing from the vascular net. Lastly, if matter of a third colour be injected into the bronchial vein already mentioned, the lung will be tinged with both these colours with which the pulmonary and bronchial vein are distinguished, so definitely, that the direction, and termination of the bronchial vein may be easily recognised. The distribution and presence of this vein however is not uniform; sometimes it is directed only to the bronchial glands and great vessels at the root of the lungs; in other instances it is totally wanting, and all the small veins enter into the pulmonary sinus at the root of the lungs, as has been remarked by Winslow,* Haller,† and Hildebrandt.‡

The course of the small bronchial veins described by our author is on the contrary uniform, and, according to the result of his dissections and preparations in the lungs of the lower animals, is to be regarded as the standard of nature. Our author, therefore, regards it as a mistake to suppose, that the bronchial vein corresponds in distribution through the whole course of the lung, to the bronchial artery; and that the motion of the blood in these vessels differs from its circulation in the lungs. He concludes with the following inference:

The bronchial vessels belong not to the cartilaginous breath-tubes only, but are continued as far as they proceed, and therefore to the breath vesicles; nor do they convey nourishment to the air-tube alone, but to all parts of the lungs, and at the same time contribute considerably to the process of secretion, which is constantly going on at the service of the lungs.

III. The examination of the third question is resolved by our author into three separate topics; 1. The mode in which the pulmonary artery terminates; 2. The nature of its communication with the minute branches of the pulmonary veins; 3. The question of its termination in the transparent or enveloping membrane. The direct transition of arteries into veins is most clearly established in the lungs, and the notion of intermediate

* Tome iv. p. 116, 120, 121. † Fasciculi iii. p. 34.
‡ Disert. de Pulmone, p. 23.

cells must therefore be placed among the fictions to which the ancient anatomists occasionally resorted. It is satisfactorily established by the result of numerous experiments mentioned or recorded by Haller, that fluids can be readily propelled from an artery into veins, without any where exceeding the capacity of the vessels; but as it was ascertained that these fluids were conveyed into the bronchial tubes either with equal or greater facility than into the veins, several anatomical and physiological authors doubted whether the arterial tubes actually passed into veins.

Fluids are conveyed into the veins more readily in a recent lung, and into the bronchial tubes in one which has been long kept. The means which Boerhaave employed to obviate this difficulty, was eventually unavailing; for though occasional insufflation to imitate the motion of breathing, was at first attended with the expected result, yet injected fluids afterwards escaped as usual by the breath-tubes (bronchi).

After these preliminary remarks, our author proceeds to examine more minutely the peculiar nature of this communication or transition of arteries into veins. The pulmonary artery accompanying the bronchial tubes to their extremities, supplies each of the vesicles with individual branches, which dividing into numerous twigs, mutually anastomosing, are distributed on the surface of the vesicles, and being again collected into a small bundle form the origin of veins. This arrangement is most easily observed in the slightly inflamed lung of an infant of two or three years. When the artery is injected with isinglass containing finely levigated ceruse, which will pass into the veins, quicksilver is to be poured into the bronchial tubes, and a minute lobule being placed between glass plates, will show the results which our author obtained. As the same phenomena are observed after injecting the pulmonary veins with isinglass, our author regards the opinion of Bichat of a capillary network intermediate between the veins and arteries as the most natural.

He further states, that this network has minute mouths, by which a fluid separated from the blood is poured into the bronchial tubes. This he thinks is established by the fact of injected fluids escaping into the bronchial tubes more readily than into any other part, and by the argument derived from microscopical observation of injected portions of lung,—that these fluids could find their way into the bronchial membrane by no other channel. The question whether these minute mouths or orifices are to be regarded as exhalent vessels or inorganic pores, he thinks cannot be determined by sensible observation, though the greater facility with which fluids pass through them,

as the lung is less recent, shows that they possess during life some property of contraction, which is diminished or destroyed in consequence of death.

The third topic which our author investigates, is the question of secretion on the outer or pleural surface of the lung. When the pulmonary artery is well injected, not only the branches of the bronchial artery, but the superficial net of vessels, is filled as well as if the bronchial artery itself had been injected. This result depends on the fact, that the pulmonary artery, near its termination, sends to the superficial vascular net numerous minute vessels, which run among the air-vesicles, and anastomose with the minute extreme branches of the bronchial artery and pulmonary veins. Reisseisen always found, however, that matter of injection was conveyed from the pulmonary artery into the bronchial, with greater facility than from the bronchial into the pulmonary artery.

The inferences with which he closes this part of his inquiry are the following:

1*st*, The pulmonary artery, in the extreme vesicles of the breath-tube, terminates in a net of vessels, which form numerous and manifold anastomotic unions.

2*d*, This vascular net-work conveys the blood into the veins in an uninterrupted course.

3*d*, At its union with the minute veins, it pours fluid into the bronchial tubes, by organic orifices.

4*th*, And, by its unions with the bronchial artery, it contributes to the secretion, which goes on at the outer surface of the lungs.

IV. In the examination of his fourth question, on the origins of the pulmonary veins, the author justly employs the facts and arguments already used in showing the terminations of the pulmonary artery. He then enters into a disquisition of some length, to show that the minute veins of the lungs do not absorb, and that this process is performed in the lungs, as Hunter, Hewson, Cruikshank and Mascagni, laboured to prove by lymphatic vessels only. Though it is not superfluous to remind our readers, that Reisseisen's investigation was performed at a period before the researches of Magendie or the function of absorption were known, yet it must be admitted that his arguments have considerable force, so far, at least, as the mere mechanism of absorption is concerned. He justly remarks, for example, that though the injection of fluids into the pulmonary veins seem sometimes to show that the veins of the outer surface of the lungs have absorbing mouths; yet the structure of the breath-vesicles, and the vascular net-work already described, shows that this is an error. For, as the arteries terminate directly in minute venous vessels, it is obvious, he remarks, that the

latter can have no open mouths to absorb; and fluids injected by the pulmonary veins must be effused from their extremities. Lastly, he says, if other arguments were wanting, the capacity of the veins shows that they do not absorb; for they would then require to have their calibre occasionally enlarged,—which, however, does not appear to take place, as it is well known that the calibre of the veins is much smaller in the lungs than in any other part of the body.

V. In treating of the nerves distributed to the lungs, he asserts, that Haller has committed a considerable error in stating the nerves to be neither large nor numerous. According to the researches of our author, they belong either to the breath-tubes, or to the blood-vessels. The former accompany chiefly the branches of the bronchial artery, between the coats of which they are said to run obliquely, and terminate in an inexplicable manner on the bronchial mucous membrane. During the latter part of this course, they cannot be traced by the knife, but may be recognised, by the aid of the microscope, in the smallest bronchial tubes. The nerves which go to the vessels, either encircle them, or accompany only without touching them. The former send minute twigs to the neighbouring filamentous tissue, in which they are soon completely lost, without the possibility of being traced. The latter set of nervous filaments, which accompany without touching the blood-vessels, are said partly to go to the superficial network of capillaries, partly to the bronchial glands. The researches of the author show, that all these nerves are derived from the eighth pair only, and that within the substance of the lungs, no branch of this trunk unites or anastomoses with any of the intercostal nerves, though this union is frequent on the outer part of the organ.

After this examination of the fifth and last question, the author concludes with observations on the general facts to be established by his researches and arguments, and on some physiological conclusions which flow from them. We do not perceive that these are either so instructive or so original as to require further notice of them here; and we trust our readers will consult the work itself for more minute details. On the whole, this Essay is not to be regarded as containing much new or interesting information, or as communicating to those conversant in researches of this kind, any thing with which they were not already acquainted. But it has shown the foundation on which our knowledge of the minute structure of the lung rests; and it has indicated, with greater precision than we have yet seen, the exact length to which we have advanced in our knowledge of the intimate structure of the lungs.

Before taking a final leave of this work on the structure of the lungs, it is incumbent on us to notice the ingenious obser-

vations of M. Magendie, which were published in his Journal of Experimental Physiology three years ago.* To study the structure of this organ, M. Magendie deviated considerably from the usual procedure of exposition and preparation; and instead of injecting, inflated the lung partially with air by the orifice of a bronchial tube, and retaining it in its distended state by means of ligature, allowed it to dry in the open air, or before the fire.

When a lung thus prepared is thoroughly dried, it is nearly transparent, and may be cut into thin slices by a sharp instrument. If a slice of this kind be placed between the eye and the light of a taper or lamp, or merely in clear sunshine, it is easy to recognise the vesicles, or what Magendie rather terms the cells of the lung. These cells observe no regular shape, do not appear to have membranous walls, and appear to be formed solely by the last divisions of the pulmonary artery, the roots of the pulmonary veins, which are immediately connected to the divisions of the artery, and lastly, by multiplied anastomosis of all these vessels.

In a recent preparation, it is impossible to see the breath-tubes going to these cells; they evidently stop when they have reached the lobe to which they belong. The mucous membrane appears also to stop at the same limit, at least it can never be traced to the vascular divisions of which the lobule principally is composed. All the cells of the same lobule mutually communicate, but they have no connexion with those of the neighbouring lobules.

Lastly, according to the researches of Magendie, the pulmonary cells vary in size at different ages, and in consequence of disease. In early life they are small and contracted;—in old age they become large and capacious. In consequence of this change, the lung of the aged becomes specifically lighter in a very considerable degree than that of the young; and from a comparison of the lung of an infant of a few days, and that of a person of seventy years, Magendie computes, that a given volume of the latter weighs fourteen times less than an equal volume of the former. It does not appear, however, that the author has made any attempt to verify this calculation by actual experiment.

The cells are also much larger in individuals who have coughed much, than in others of the same age whose lungs have been sound. If these individuals are aged, the cells are sometimes two lines in diameter, without manifesting any trace of rupture. In certain old subjects in whom one lung only was

* Journal de Physiologie Experimentale, par F. Magendie, Tome I. pp. 78, 79.

diseased, the sound lung, when inflated and dried according to the method above mentioned, resembled light froth.

This change in the pulmonic tissue of the aged, which the author considers as a variety of rarefaction, he ascribes to the diminished number of capillary vessels by which the blood issuing from the right ventricle enters the pulmonary veins;—in other words, to the diminished surface on which respiration, or the conversion of venous into arterial blood, is performed.

The results of these observations do not agree in every respect with those of Reisseisen; and the attentive reader will easily recognise discrepancies, which are perhaps to be regarded as proofs, that our knowledge of the ultimate structure of the lungs is neither minute nor accurate. Personal observation would lead us to say, that what are termed *breath-cells*, or vesicles, are merely the ultimate terminations of the bronchial tubes mutually intersecting; that they are formed chiefly by a thin membrane, which is believed to be mucous, rather because it is continuous with the membrane of the *bronchi*, than because its structure or nature admits of direct demonstration; and that the outer or attached surface of this pulmonic membrane is connected to the other organic tissues of which the lung consists, by a delicate modification of that substance which has been called *cellular membrane*, but which would be more correctly named the *filamentous tissue*. It is by the same sort of tissue that the transparent pleura is attached to the lung; and when this thin membrane is carefully detached by the forceps, its structure, and the mode in which it surrounds the last divisions of the bronchial tubes, may be easily studied and recognised. It is our own opinion, however, that the subject still admits of investigation, and, in the hand of a diligent and successful observer, might be illustrated with greater precision, and more original information, than has yet been communicated.

Commentarium de Urethræ Corporis Glandisque Structura VIto Idus Decembris ann. M. DCC. X. detecta, Ab I. R. Scientiarum Literarum Artiumque Instituto approbatum, Alexandri Moreschii Equitis Coronae Ferreae in Ticinensi primum, tum Bononiensi Archigymnasio Anatomes Professoris. Accedunt de Vasorum Splenicorum in Animalibus Constitutione, nec non de Utero Gravido Epitomae. Cum Tabulis Aeneis. Mediolani, ex typographia Joannis Pirottae. 1817.

(From the Same.)

Exactly two years ago, we took occasion, in our account of the researches of Sir Everard Home on the structure, and

those of Professors Tiedemann and Gmelin on the functions of the spleen, to speak of what has been termed by Dupuytren, Richerand, and other French anatomists, the *Erectile Tissue*. We also observed that the nature and intimate arrangement of this tissue had been studied chiefly in the cavernous body of the penis, and the peculiar structure surrounding the male urethra, to which anatomists had applied, in regard rather to its appearance than intimate characters, the name of *spongy body*. Of the anatomists who have distinguished themselves by personal researches into the characters of this tissue, Alexander Moreschi, Professor of Anatomy, first in Pavia, and afterwards in Bologna, may be said to hold a conspicuous place; and the work now before us, which contains his original researches, may be regarded as the most authentic and satisfactory account of the subject, which has hitherto appeared before the public.

The author informs us, that in the beginning of December 1810, when tracing the nervous twigs of the crural plexus, as he had injected most of the minute vessels to their smallest extremities, he thought of rendering the preparation more complete by injecting those of the penis also; and with this view, he first distended the cellular or cavernous body with green coloured matter, and afterwards that of the urethra with red coloured injection. The result of this experiment was, that the matter injected, instead of diffusing itself extensively through the cellular structure of the glans, as had always before happened, formed on its whole surface an intricate net-work of very minute vessels, of which no mention had hitherto been made by anatomists.

After assigning various reasons for the defective result of the injections of former anatomists, Moreschi came to the conclusion, that his researches had been crowned with a degree of success, for which all his predecessors in the inquiry had in vain longed; and that they were calculated to throw much light on the true structure of the organ, which he conceived had been hitherto quite misunderstood. To show that he did not by this assertion go beyond what was actually the truth, he has examined with much care the descriptions of former anatomists, from his countrymen Mondini, Achillini and Berengario, to De Graaf and Swammerdam, who, in his language, adorned this Sparta more zealously than their predecessors;—to Ruysch, whose injections proved that the cavernous bodies and spongy substance had no communication, and Heister, who, after many dissections, concluded that the body and glands of the urethra were composed of cellular texture;—and lastly to Cuvier, Roux and Blumembach;—the first of whom only appears to have been aware of the vascular character of this organ. Though some obscure glances at this subject had been taken by such acute

observers as Albinus, Santorini and Morgagni, yet, in general, the deviations from the customary doctrines on the structure of the cavernous body and outer substance of the urethra, were too insignificant to supersede future investigation, and too uncertain to be instructive. Our author, in short, considers the modern description by Fattori, author of the Italian "Guide to the Study of Human Anatomy," as a fair specimen of the general state of anatomical knowledge on this kind of organization, and therefore regards the field open to new and accurate researches. We regret to say, that even the best and most recent descriptions, both of French and British anatomists, are either too closely copied from those of their predecessors, or contain too little original matter to exempt them from this character; and we are obliged to assent to the general truth of the assertion made by the Italian anatomist.

Such were the circumstances, when, by a favourable concurrence of events, Moreschi succeeded, as we have already stated, in unfolding the net-work of minute veins, which not only cover, but completely compose the glans. Those at the side of the glans scarcely exceed the vessels of the iris in size; but as those which are formed by the mutual union of the minute veins are enlarged, in proportion as they approach the centre and upper margin of the glans, and finally open into the deep dorsal vein, he regarded this as the obstacle, which prevented this part of the animal body from being examined with that attention, which is requisite to unfold the true structure of a complicated organ.

Encouraged by success so unexpected, without shrinking from the task, he proceeded to examine the subject in a different style. Having therefore injected in different ways the cutaneous or superficial dorsal vein, he examined its trunk, not far from the glans, where it is generally divided into two branches on each side. The more delicate of these are distributed on the upper surface of the prepuce, forming arches which diminish in size as they approach its extremity. The larger branches run behind the glans, where, being much diminished by supplying twigs to the sides of the prepuce at the glans, but especially at the extremity of the vascular body of the urethra, they are lost in convolutions on the frenum, where they are fashioned into fanciful and manifold turnings. Hence the body of the urethra, which has been hitherto called *spongy*, may now, in some measure, be termed *vascular*, according to Moreschi, since the portion of this body now mentioned, and the whole surface of the glans, appeared eminently vascular, from the single injection of the cutaneous dorsal vein. The rest of the dorsal vein near the arch of the pubis, filled in like manner with wax, was seen separated into two branches, one of which on

the right, the other on the left, having received twigs from the scrotum and perineum below, above from the skin of the abdomen, at length inosculate with the inner saphena vein, near its union with the crural vein. (§ 32—§ 34.)

Since the body of the urethra continued empty behind, notwithstanding both injections of the cutaneous dorsal vein, Moreschi completed his experimental investigation by throwing into the bulb of the urethra itself, matter differently coloured from that which he had first injected into the anterior ramifications of the same vein distributed through the prepuce and glans. The posterior part of the urethra, therefore, being filled, the injected fluid, conveyed through the same body here and there to the *frenum*, met the contiguous ramifications, which had been already filled with wax by injection of the anterior portion of the cutaneous vein. The impulse of this variously coloured matter by different paths into the same vessels, occasioned the distension of several veins, which, rising from the sides of the bulb, are turned over the cavernous bodies of the penis, that thence they might osculate after a short interval with the veins running under the arch of the pubis. Moreschi then pursued the new and very clear proof of a direct communication of the dorsal vein with the glans, and body of the urethra, or of the origin of the same from the minute vessels of the urethra and glans, by making another trial, in which he impelled the matter, by the syringe, into the vascular body of the urethra. The result of this injection was a conclusive proof of the communication between the veins of these several parts; the glans and the cutaneous dorsal vein with its twigs creeping through the integuments of the belly, and also several cutaneous lateral branches of the penis entering the dorsal vein not far from the pubis, before this is divided and united with the saphena vein, appeared at the same time filled with fluid. Whatever he discovered by analytical trials, he thus proved more satisfactorily by the synthetic mode of investigation. (§ 35—§ 37.)

Of the small venous vessels which we have now enumerated, the greater number issue from each side of the *vascular* body of the urethra, and very few only from the bodies of the penis; and as each of them ascends from the lower or urethral to the upper part of the organ, they encircle it, and by uniting, finally form the deep dorsal vein. (§ 38.) The vessel thus formed not far from the glans, runs along the furrow of the cavernous bodies, divides into two branches beyond the pubal arch, and, supported by the cellular tissue which connects the anterior surface of the bladder to the inner wall of the pubis, descends to the sides of the pelvis. Nor is the dorsal vein the only one which is produced from the branches described, as we find in Cowper, Haller, and other writers of authority. Camper,

whose researches on the nerves and vessels of the pelvis excel those of all previous writers, mentions only one dorsal vein of the penis; while Winslow thought this vein was not single, but confesses he had sometimes met with two, more rarely with three. (§ 40.)

Moreschi, who, in the trials described, discovered innumerable vessels proceeding to the vascular body of the urethra, and to the glans, does not consider it wonderful, that these chief venous trunks running under the pubal arch are not reduced to one only, or perhaps to two or three. He generally found them five in number, of which the central one is longer than the others; the lateral ones shorter, and the outer the shortest of all. (Tab. I. Fig. 2.) But in the horse, both on account of the great length of the *vascular* body of the urethra, and on account of the size of the glans, the veins increase in so great number, that, creeping extensively from the corona glandis to the symphysis, they encircle the whole penis of this quadruped. When the injection of these vessels is successful, not only the upper and lateral surfaces, but also the lower, are covered by a great abundance of veins, the calibre of which is considerable; and he therefore concludes, that every part of this organ is covered by these vessels. (§ 41—§ 42.) (Tab. III. Fig. I.)

Further, in the ram, which is provided with a penis not shorter, considering the size of the animal, than the horse, the *vascular* body of the urethra is so slender, narrow, and thin, and the glans so little extended, that a single vein is sufficient for collecting the blood flowing from this very long body of urethra, which is so slender, that it does not exceed the dorsal vein itself in diameter. (See Tab. III. Fig. 6.) Though this *vascular* body of the ram's urethra is thin and very small, yet if properly distended with injection, it will immediately appear that it consists of nothing but a very *delicate net of vessels*, which is biparted by a line from its origin to the glans. But the net-work with which the glans is covered, is woven in a manner so simple and manifest, that it may be more easily conjectured, in other kinds of animals, what is its composition and the course of its vessels. Another peculiarity in the penis of the ram is, that the urethra has not the same termination with the glans, but, assuming the appearance of a cone, attached as it were to its length, is extended about two inches beyond the glans. The glans of the ram, therefore, does not appear open (*hiulca*) horizontally, nor does the urethra open at the left side; and it is a mistake to suppose that it is a sort of slender appendix; but a circular furrow only separates the base of the glans from the extremity of the cavernous bodies; and the researches of our author show satisfactorily, that the appendix

now mentioned is nothing but a continuation of the canal of the urethra itself. (§ 44.)

The same arrangement may be more clearly demonstrated in the penis of the horse, on account of the greater diameter of the vessels; for in this animal the body of the urethra is divided into two parts, from which the vessels arise by a small origin. These having quitted the substance of the urethra, unite mutually by lunated arches, and decrease in number in such proportion, that, as they form larger venous vessels creeping over the whole surface of the organ, they gradually enlarge their calibre. From this arrangement of veins in the penis of the horse, Moreschi thinks it may be inferred, that the dorsal veins are multiplied either as the body of the urethra becomes thick, or as the glans is expanded in animals; so that for one single dorsal vein in the ram, they pass into a considerable number in the dog and horse.

Into the spaces necessarily formed by the origin of these vessels and their mutual union, so many productions of the cavernous bodies of the equine penis are sent, which, embracing closely the vessels now mentioned, retard the blood contained; and by this wonderful mechanism the penis is kept rigid during the process of copulation.

These vessels arising from the body of the urethra, penetrate its substance so deeply, that not the smallest particle of this body is left, which may not be regarded either as their origin or continuation.

"If we compare the series of vessels, looking to the urethral body of the ram and horse, with that which belongs to the same body in the human subject, we are compelled to acknowledge, that the improper *predicate* of this organ ought to be banished, as it conceals its true and intimate structure; and we therefore think that it ought to be justly and deservedly named, not the *cavernous body*, as formerly, but the *vascular body* of the urethra and glans. (§ 48.)

"Terms, as is well known, have been contrived for expressing the appearances of objects; it is therefore expedient that the terms should be subservient to the objects, and should follow the meaning closely.

"Since, therefore, the structure of the body of the urethra and glans is shown by observations to be very different from that which its former and improper predicate meant or implied, and which cannot communicate a just or true idea of its structure, lest the tide of custom should carry us away to the wonted style of speech, I may be henceforth allowed to call it the *vascular body*. And this name created with the object, appears to me indeed to be derived from its structure." (§ 50.)

To the question, whence is derived this universal abundance of vessels, of which the glans is composed, unless from the body of the urethra, our author answers, that it cannot be denied that

there is found between the vessels composing the body of the urethra, cellular tissue, which furnishes support and connexion to its vessels; but it does not therefore follow, that this cellular body should be called cavernous, since the testicles for example, the liver and kidneys, though they are composed in a manner not unlike, of vessels and cellular tissue, yet are never called cellular organs. He further censures the barbarous taste, in which this structure has been called *parenchymatous*,—a term which, says he, although still used occasionally by some inaccurate authors, in intricate investigations on structure, yet it is difficult to see what is its signification. "It were indeed to be wished," says Moreschi, "that the practice had not become so general, of naming all things almost in this art by Greek words, expressed in Latin characters, rather than by terms either truly Latin, or at least, transmitted from the golden age into Latium." (§ 51.)

In the human subject, the skin of the glans has the appearance of a most delicate membrane; in most other animals also it is very thin; but in the horse it is sufficiently thick and firm to admit of removal by dissection. Now, if after proper injection of the vessels of the penis of this animal, the integuments of the glans be stripped by art, it will be easy to see that the whole urethra, both outwardly and inwardly, consists of vessels, which are so much the more exposed, as the extremity of the urethra for about one half inch remains free from the rounded end of the glans before the lunated hollow, by which it is surrounded at the upper part.

But, since these vessels, united so closely to each other, leave no membranous interval, and exhibit the same constitution under the glans as may be seen openly, when the cylindrical body of the horse's urethra is divided below longitudinally, to expose its inner surface, it hence is truly proved, that the whole canal of the urethra, not less than its body and glans, is entirely *vascular*. (§ 53.)

The vessels issuing from the sides of the urethra, and conveyed through the cavernous bodies, from the lower to the upper surface of the steed's penis, must enter the dorsal veins with so much more difficulty, as the cavernous bodies impelled for copulation are more protruded and swelled; for then, on account of this swelling of the penis, the calibres of the vessels are diminished, and their flexuosities are increased; and this change, at the instant of copulation, necessarily retarding the blood flowing through them, must certainly greatly contribute to support the glans, which in the horse being much expanded, opens near the centre with an oblong chink. While this chink gives issue to the cavernous bodies which are extended to its

apex, for supporting the glans, it embraces the end of the cone of the same bodies by its own fringe (limbus).

Since the arrangement and adaptation of the vessels of the human penis is similar, it is easily understood, that the swelling (intumescence) of this organ depends, not on compression of the dorsal veins, but on contraction of the muscles, and impeded passage of that blood which delays passing through the vessels of the urethral substance, until these vessels, that they may be united with the dorsal ones, are compelled to describe a more extensive semicircumference round the cavernous bodies of the penis swelled during copulation. Moreschi concludes, therefore, that the whole vascular body of the urethra, and its continuation, namely the glans, ought entirely to swell without any effusion of blood within the cells. He, however, does not absolutely deny this compression of the dorsal veins, which Albinus conceived, but admits that it may be enumerated among the effects at least, if not the causes of erection. (§ 57.)

From this it easily follows, that the structure of the cavernous bodies of the penis is not of the same sort as that of the vascular body of the urethra, as was improperly thought by all anatomical writers.

The cavernous bodies of the penis, Moreschi is most anxious to show, are endowed with a scanty number of blood-vessels, and are constructed very much of a tenacious cellular tissue. Further, in some animals,—for example, the horse, bull, and ram,—this cellular tissue is so circumstanced, that the most delicate matter of injection can penetrate only a very short space to its cells. (59.)

The body of the urethra, on the contrary, abounds, beyond other organs of the human frame, in vessels chiefly venous; that is, in one uninterrupted *plexus* of very delicate venules, proceeding from the bulb to the crown of the glans, by which these, in ascending the lateral and upper surface of the penis, mutually unite in order to form the middle dorsal vein. Our author, therefore, concludes, that though this body has been examined by dissectors to the present day with various results, and he has personally succeeded in completing only two admirable preparations during the space of five years, yet, as he has explained all the objects which he proposed in the beginning of his inquiry, the body of the urethra is to be regarded as rising into a taper bundle of vessels, totally different from the cavernous bodies of the penis.

This inquiry into the structure of the urethral substance is succeeded by a short statement of observations and reflections on the structure of the spleen, or rather on the arrangement of

the splenic blood-vessels. We do not regard these observations as either so original or so instructive as those to which we have already adverted; they are rather diffuse, and, as too often happens with such inquiries, a good deal mingled with matter which is merely hypothetical. We shall, however, do our best to condense them, and present merely the necessary parts of the inquiry in this place.

Anatomists who have studied the disposition of the spleen and its vessels in the lower animals, are aware that they are liable to considerable varieties; and though it is perhaps, in the present state of our knowledge, impossible to explain all these varieties in the individual tribes or genera in which they occur, yet, by a comprehensive view of them, it is reasonable to expect, that they may be more clearly understood than they would otherwise be. Our author, in this instance, adopts a principle which Malpighi first distinctly announced in physiological researches, and which, though mentioned in our author's previous dissertation, is, in our opinion, more forcibly applicable to the subject before us. The principle to which we allude is this. In the case of organs, the structure and functions of which are involved in obscurity in one tribe of living beings, if it be found that, in other tribes, the structure is so varied as to approach more closely to a perfect organ, the properties and uses of which are so well marked as to be recognised after suitable examination, and to be so important that they could not be omitted without serious injury to the frame of the animal, it may then be inferred, that organs of the kind to which we allude, are to be viewed as forming integrant parts of a great scale or arrangement which passes through many tribes, orders, and classes of animals,—that though various forms of such organs are retained for the sake of uniformity, and occasional deviations are observed, they are rarely to the extent of complete exclusion of such organs. According to this principle, it is also inferred, that, though the uses of such organs are not very conspicuous, or are absolutely unknown, in many tribes of animals, yet as they are evident, or at least not completely unknown, in others, some degree of these uses must prevail in all animals, and the precise extent of it is to be conjectured only in individual tribes.

"When I first observed," says Moreschi, "that the chief branches of the splenic artery in the horse and similar animals do not penetrate the spleen, but the stomach, I was moved with so great wonder, that I could not refrain from investigating the matter more carefully, and diligently extracting the reason of so great a difference, if possible, from the secrets of nature. My hand being set to the task, I conceived my object to be accomplished, by comparing this arrangement of vessels with the various number and situation of these vessels in

different orders of animals, which embrace sometimes the œsophagus, sometimes the stomach, now the upper, now the middle, now the lower part of the intestinal tube; since it would be quite evident why certain kinds of animals, impelled and influenced by a singular force of those dissolving fluids which are secreted by such vessels, changed in the circumference and surface of the intestine at one time into *villi*, at another into glandules, sometimes into both, are never satisfied with food; and why other kinds of animals, by too great scarcity of the same fluids, either drown in long sleep, or are almost consumed with fasting, the chief property of life, that is, nutrition, being changed by changed disposition and number of splenic vessels." § 12.

After taking notice of the resistance which is frequently made to the admission of new views of the structure or functions of organs imperfectly known, and stating that the present observations are to be regarded as a merely temporary account of his researches, until opportunity of publishing a more complete work shall occur, our author proceeds to enumerate the principal facts regarding the structure and appearance of the spleen in the following manner.

"The spleen, of substance not very hard (firm), of purple colour verging to violet, is situate at the upper part of the abdomen in the left hypochondre, beneath the false or vertebral ribs, between the blind fundus (large end) of the stomach and its larger arch and the diaphragm. Not of the same size in all. To glance at its figure, it appears to approach nearest to the elliptical, uneven where it is directed to the diaphragm and ribs, flat or concave where it looks to the stomach. Often, however, its shape varies, and it may be divided into sinuosities and globules, so as to give it the appearance of a cluster of grapes (racemus).

"It is retained in the site allotted to it by several ligaments or connexions; 1st, loosely to the diaphragm by means of portion of peritoneum; 2d, to the stomach by the middle blood-vessels called short (vasa brevia), and by the omentum; 3d, by this means also to the transverse arch of the colon, where this intestine touches the left hypochondre. The spleen, nevertheless, is not entirely immovable; for when the stomach is empty, it fills with blood, and descends under the false ribs; and when the stomach is filled, the lower part especially of the spleen, is elevated against the ribs, and it becomes shorter; so that the bulk of the spleen observes a sort of inverse ratio to the fulness of the stomach.

"This organ is further covered by two membranes, one of which is a continuation of omentum, which is provided with some fat, and may easily be detached or stretched from the organ; the other, a prolongation of the peritoneum, very thin, and wonderfully adherent to the spleen, cannot be detached from it without being torn into fragments. We admit this to be the proper membrane of the spleen, which being drawn off, and, at the same time, the minute vessels being torn out (for its structure is so very soft that it may be disturbed by the slightest pressure of the finger), the organ is resolved partly into vascular

partly into cellular structure. It may also be resolved into this, showing large cells, if, on applying a syringe to its artery, we inject water to wash out all the blood, and inject air and dry it subsequently. When this is done, in whatever manner it is cut, it exhibits cells; and though these are factitious, or occasioned by the experiment now mentioned, yet they have been regarded by several judicious persons to be natural and peculiar to the organ. Further, the cells which appear in the spleen of the larger quadrupeds are not to be regarded as true cells, but as the sections of so many vessels abounding in the thick membrane derived from the peritoneum. The spleen also, in animals of this kind, undergoes so great pressure, that, without this provision, it must be seriously injured." § 16.

The splenic artery derived from the cœliac trunk has a much larger calibre than appears consistent with an organ of its usual size; for though the spleen is smaller than the liver, the artery which goes to it is six or seven times larger than that which goes to the liver.

The splenic artery, on reaching the spleen, divides into three or four principal branches, from each of which a small artery proceeds upward to the large end of the stomach, to form what are named the short vessels (vasa brevia), or rather the *splenogastric*. The principal branches, on the contrary, after running along the surface of the organ, at length enter its substance, and, in their progress, are divided into branches, constantly diminishing, in such manner however that the twigs of one branch have direct and manifold communication with those of others. The extremities of these small arteries at length terminate in so many vascular prolongations or *pencils* (penicilli), which communicate by inosculation with small roots or origins of veins. These again gradually unite and coalesce into vessels, which increase in size as they recede from their roots, and finally emerge from the flat surface of the organ, in the form of four or five considerable veins, which unite and form the splenic vein. According to Moreschi, the blood which is conveyed through the branches of the splenic artery to its small divisions, is returned from this organ by the splenic veins, almost unchanged; it is more fluid, coagulates with greater difficulty than the blood of the portal vein, and is of a more vivid colour, being similar to arterial blood. He then proceeds to notice the disparity between the proportional size of the hepatic and splenic arteries, when compared to the organs to which they belong, and concludes that the blood conveyed by the splenic artery cannot be intended to nourish that organ—that all of it is not destined to the spleen; but, since both the spleno-gastric vessels and the left gastro-epiploic derive their blood from the same source, the splenic circulation, in general, is intended as a sort of reservoir and regulating standard of that of the stomach, (21,

22); and this splenic blood, in his opinion, while in the arterial state, supplies the stomach with whatever is necessary to the process of digestion; while that which comes from the splenic vein is useful in augmenting the fluidity of the blood conveyed by the portal vein to the liver.

To the natural objection, that if the stomach require more blood than is conveyed by its proper vessels, why are not these vessels larger or more numerous,—he judiciously answers, that the condition of this organ and its capacity are not at all times the same in the same individual; and as there are seasons during which much blood in the gastric vessels would be injurious, so there are others to which it is both useful and necessary. He then proceeds to state, that, as in most carnivorous and voracious animals the splenic vessels are large and numerous, and as this is connected with an abundant secretion of gastric fluid, it appears reasonable to think, that this disposition of the splenic vessels is a contrivance employed to conduct the process of digestion in these animals with facility, and without inducing disease in the circulation of the stomach. It is somewhat like a confirmation of this inference, that in the horse and similar animals which, as Moreschi observes, are able to digest by a single stomach a quantity of vegetable matter which requires four in the ruminating animals, the splenic artery, running along the upper margin of the spleen, furnishes the coats of the stomach with numerous vessels, which become more abundant as they pass on, and are, with the exception of a few small branches to the spleen, finally lost in the stomach.

Our author then proceeds to derive similar conclusions from the phenomena of digestion, and the disposition of the spleen and its blood-vessels in various orders and kinds of birds, compared with what he terms lethargic animals, by which he appears to understand several of the amphibious tribes, as the tortoise, lizard, frog, &c. (27); and, after answering those objections which might be conceived to be derived from the structure of the molluscous animals and insects which are destitute of spleen, and even some vertebrated animals in the same circumstances, concludes with the inference, that the spleen is not an auxiliary organ to the liver; that in animals in which the latter is sufficient to the purposes of digestion, the former is wanting, and that its main purpose is to regulate the circulation of the stomach,—to be subservient to the preparation of the gastric fluid,—and to act as a reservoir for blood, without effecting in it those changes which take place in its transition from arteries to veins.

In the third essay on this work, on the gravid womb, we expected to find some new and instructive information on the structure or arrangement of vessels in the placenta. We can-

not discover, however, that Moreschi has been more successful in the prosecution of this inquiry, than any of his predecessors; and we find actually nothing added to the sum of what was already known on the process of fœtal growth and uterine or placental circulation. He states, in his 32d paragraph, what is sufficiently well known, that injections of the vessels either of the mother or of the fœtus, penetrate the placenta to a certain depth only; that those of the fœtal vessels never reach the maternal or uterine side of the placenta, nor do those of the womb reach the vessels of the fœtus; but he nevertheless infers, from the phenomena of hemorrhage, that a communication does exist. We need scarcely observe, that this argument has no force whatever.

In his 37th paragraph, Moreschi further informs us, that in several repeated injections he never succeeded in impelling either the most delicate glutinous matter, or mercury, from the arteries of the umbilical cord into the corresponding vein, or from this vein into the arteries through the placental substance. As the injection from the arteries however filled all the vessels belonging to it almost instantaneously, he concludes, that between the venous roots or origins of the cord, and the minute arteries of the womb, there is the same connexion which subsists between the venous twigs of the maternal vessels, and the arterial branches of the fœtal side of the placenta; "from which," says he, "it may be inferred, that the vessels of the umbilical cord are equal in number to the uterine vessels, which mutually inosculate."

These appear to be the most remarkable parts of the short disquisition before us. In other respects, it exhibits a correct and sufficiently comprehensive view of the present state of knowledge of the uterine, fœtal, and placental circulation.

The work is accompanied with four large engravings, exhibiting delineations of the preparations made by Moreschi, and employed in his descriptions or reasonings. They are executed with the accuracy and neatness for which Italian engraving has long been distinguished.

We cannot close this work without adverting to a circumstance which may to many appear both uninteresting and unimportant, but which ought not to be passed over in silence in a work composed in the country which gave birth to Tully, and boasted in its patronage of Quintilian, and was distinguished for first reviving the almost extinguished embers of ancient Roman literature. We dare say our readers will anticipate us when we inform them, that the three disquisitions before us are written in the Latin language; but we regret to say, with so many violations of what we have been taught to regard as the most classical and correct form of that language, that un-

less we were actually told of it, we could not believe that it was the production of an Italian professor, but rather of some heavy Batavian, of thrice blessed memory, whose attempts to express himself in the language of ancient Rome have never enabled him to make a nearer approach to the style of Cicero and Celsus, than merely to substitute, almost word for word, his native Bœotian in Latin terms. Independent of the confusion which never fails to result from a parenthetical and involved mode of description or detail, and from an attempt to crowd into a single sentence half a score at least of different facts or arguments, most strangely hinged on each other, the very words and expressions are not unfrequently extremely ungrammatical. We have not particularly sought for errors of this description; but they were spontaneously thrust on us in numerous places. The following examples may be mentioned. There is no such word as *dorsuales*, which is uniformly used for *dorsalis*. *Nedum* (42, 13) for *non solum*, is improperly used to express *not only; much less* is its proper signification. *Magnâ diametro*, in the same member, has no meaning whatever. The author evidently wishes to say, "that the inferior surface is also covered by a great number of such vessels, of considerable calibre." *Rete* (44, 13), which is used in the ablative, joined with *subtilissimo*, is totally unsanctioned by classical use, which uniformly makes the ablative case of such words in *i* (*reti*). We have repeatedly observed the same error to be committed by many modern writers of Latin, and even by Haller. *Vasculare* is used erroneously, *passim*, for *vasculosum*. *Efforment* (45, 14) and its participle *Efformata* (46, 14), are rather affected expressions, and, we think, not sanctioned by authority. Instead of the latter, *Enata* would certainly have been more correct. The 52d paragraph, 16th page, is a most miserably constructed sentence. It consists first of a condition, in which are involved other conditions; and then of consequences, to which other consequences are attached; and it may, on the whole, be presented as one of the most perfect specimens of confused and involved writing which we have ever had the good fortune to decypher. In the 57th paragraph, *propterea* is used for *igitur*, in the most unwarranted, and, we are disposed to think, a very affected manner. *Splen*, and *stomachus*, which are repeatedly used for *lien* and *ventriculus*, are Greek, and must always be regarded as barbarisms, where a Latin term can be found. *Elementum* (25, 10), though adopted by the poets and philosophers, when writing on the philosophy of the ancients, is never used by classical authors for the *sea*. *Tetigimus* (40, 18) is improperly used for *submonuimus*. The most extraordinary error, however, which perhaps any author pretending to write in Latin could commit, is the positive violation of the grammatical rules and just idioms

of the language. Several of this description have occurred to us; but two are so flagrant that they must be mentioned. The 3d paragraph of the 2d dissertation commences with the following words—"Animalia autem gramen vel aliud vegetabilium genus pascentia," &c. Now, we defy the author to produce a single example from any classic of authority, in which *pasco* is ever used in the sense of *eating*, intransitively; and the sentence ought to have stood—Animalia gramine vel alio vegetabilium genere vescentia, &c. In the same manner, *processu* is found, in the true spirit of modern Latinity, for the present participle *progredientes*, or some such word. It is with some degree of pain that we feel obliged to expose these failings in the Latin style of a Bolognian professor; but the evil is so general, that we doubt not it may ultimately terminate in the modern authors forming a new and unknown species of Latin, which will be just as like the models which they pretend to copy, as the monkish barbarism of John of Holywood, or the fantastic Arabesque of Gaddesden. If Latin is still to be used in medical writings, it ought at least to be free of barbarisms and positive errors; and if this cannot be done, it would be much more rational, and not less creditable, for the author to express himself in a modern language generally understood.

Selected Cases.

Cases in which Fumigation was successfully employed. By Powell C. Blackett, Esq., Member of the Royal College of Surgeons.

(From the London Medical Repository for April, 1824.)

In a late paper which I had the honour to transmit to the Repository, I engaged myself to furnish the result of my further experience of the efficacy of fumigations in several diseases. In fulfilment of that promise, I now forward some additional observations on that remedy; at the same time, being well aware that much more remains to be said on a subject so comprehensive and interesting as it is, and which, in this country, has been little attended to, and, consequently, is but little known.

Case I. *Cutaneous Disease.*—Mr. J. G., enjoying a tolerable state of health in other respects, had been afflicted, for the last seven years, with disease of the skin, partaking of the nature of psoriasis; it was a source of the greatest inconvenience to him, particularly when warm from exercise, or when in bed. The itching at those times was next to insufferable.

On leaving bed in the morning, the sheets would usually contain as much scaly desquamation as would fill a plate. The disease was much aggravated in the spring of the year, and still more so in the autumn; at those times it put on the appearance of impetigo, attended with a discharge from the sore or abraded cuticle. Exertion or flexure of the body frequently occasioned the skin to crack into long fissures, giving rise to a profuse ichorous discharge; which, if not carefully absorbed with soft rags, was followed with excoriation wherever it was allowed to remain.

It was a little after the autumnal aggravation of symptoms, and when in the state above described, that, by my advice, he tried the sulphurous fumigations every other day. The impetigonous character and soreness was rapidly subdued; the scales, at the same time, detaching themselves in abundance, and new ones forming, but of a thinner description, until they altogether ceased to be generated. The skin remained preternaturally red for some time; but this gradually wore off. The whole of the surface of his body is now perfectly soft, natural, and perspirable, which it had never used to be. His complexion, from being of a muddy colour, has become clear, and his cheeks florid. He took, in the whole, twenty-seven baths, conjointly with the following internal remedy:—

R Sulphuris Præcip. ℥ss.
Potassæ Supertartar. ʒj.
Pulv. Jalapii, ʒss.
Misce bene, et distribue in chartulas xviij. Capiat unam bis in die ex melle.

In addition to this powder, at the suggestion of Mr. Green, he took half a pint of tar-water twice a day.

It would be an irksome task to enumerate the variety of medicines that this gentleman had taken for the removal of his disease; and many of them were persevered in for a long time, but without any apparent good effect. He had likewise spent several months at Bath and Harrowgate, but without any permanent benefit: the waters of the latter place, however, seemed to have been of rather more service to him than those of the former.

Case II. *Syphilitic Ulcers.*—Mr. T. W., a strong healthy man, had been annoyed for upwards of six years with extensive ulcerations in various parts of the body, in consequence of syphilis. These ulcers occupied the scalp, the spine, and legs. Those on the scalp and spine would sometimes, in consequence of the applications externally used, and the remedies taken, remain healed for a month or six weeks at a time; they would then suddenly break out and extend to a considerable size,

always putting on the honeycomb character and a dark copper colour. Generally the healing process would begin from the centre, but would not advance regularly, it suddenly becoming, after two or three days, arrested, and the ulceration assuming as bad an appearance as before.

This gentleman had been salivated three different times, without manifest advantage, notwithstanding it was generally when he was in a state of ptyalism that the ulcers put on their most favourable appearance; the medicine, however, was then obliged to be discontinued, in consequence of the great weakness it occasioned, and its running off through the bowels. Various remedies and applications had been tried, under the direction of some of the most intelligent practitioners, but the disease resisted all efforts. Under the foregoing circumstances, I advised a trial of the fumigating baths, but not with much confidence of the benefit that would follow. My satisfaction was not little on seeing the amendment that took place after the fourth bath. He took in all eleven in the period of a month. The ulcers on the legs and spine cicatrized completely during their use; but, from causes unnecessary to be detailed, he was under the necessity of discontinuing them, there remaining still some ulcerations on the scalp, which, however, during the three weeks after discontinuing the baths, became firmly healed like the legs and spine, and assumed a healthy appearance.

The first few baths occasioned considerable pain in the ulcerated parts whilst submitted to the action of the sulphurous acid gas: this smarting pain gradually became less until it altogether ceased; the ulcers then regularly and progressively got well. At the end of three months the parts have not shown the least disposition to relapse.

Case III.—I have now a gentleman, aged twenty, using the baths, for scabies of the purulent kind. It has existed since the age of between nine and ten, occupying particularly the flexures of the joints, the insteps, hams, fossæ of the nates, bends of the elbows; and more or less extending over the whole body, excepting only the palms of the hands and the soles of the feet. He has taken a great variety of remedies, and used as many external applications, but without permanent benefit. He has now employed a bath daily, for the last three weeks, with such progressive improvement, as to lead me to expect his perfect cure. In conjunction with this remedy, he at first took Plummer's pill, but it was afterwards changed for small doses of arsenical solution.

Case IV.—A lady, about forty years of age, whose digestive organs had been for some years in a deranged state, complained

of flatulent distention of the stomach and intestines, occasional spasms, and colicky pains, followed by sickness and acrid eructations. Her habit of body had been always constipated, arising, as it was supposed, from a torpid state, and some partial indurations of the liver; and she had frequently suffered from attacks of erysipelas in the face and about the ears. She was much reduced in muscular strength. She had been taking, for a long time, the different preparations of mercury, in various forms, and with other remedies. When she applied to me, the submaxillary and parotid glands, on one side, were so much swollen, as to occasion pain and difficulty in swallowing; and the sterno-cleido-mastoideus muscle was much enlarged and painful, so as to cause the patient to carry her head on one side. She attributed these swellings to a severe cold she took at Brighton last winter, whilst under the influence of mercury. For this lady's complaints I directed tonic remedies, with an aperient at night; and as the skin was in a harsh dry state, as an adjunct, I ordered her every other day to use a sulphurous fumigating bath. It gave me great satisfaction to find, that, at the expiration of a week, my patient expressed herself better. At the end of three weeks, the swellings had disappeared, and she could move her head without pain; her general health was much improved; the skin had become soft and natural. She now discontinued the baths, but took daily an acidulated decoction of bark, until she considered herself quite well. It is now more than two months since she left off all medicines, excepting an occasional aperient. She has since had some slight colds, but no erysipelas or return of the swellings.

Case V.—M. B., aged forty-five, a man of robust constitution, had been seized with a dry scabies: the itching was exceedingly troublesome to him, particularly when he was near the fire or in bed; his general health was indifferent. The disease occupied the hams, but more particularly the hands and arms. In the hands, the fissures were many, and some of them very deep. He took one dram of the lac sulphuris twice a day, mixed with sugar, and used twelve of the fumigating baths, by which means the cutaneous complaint was completely removed.

Case VI.—J. W., a lady upwards of seventy years of age, had been greatly distressed, for the last four months, with *prurigo senilis:* the itching was at times intolerable to her, and, from scratching, the surface of her legs was abraded, swollen and inflamed, and oozed a watery discharge. This patient's skin was in a dry shrivelled state, from age and the nature of the complaint. I immediately recommended to her the adop-

tion of sulphurous fumigation, which, after a time, removed the disease.

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I trust it will not be considered a trespass if I add a few observations connected with the employment of this remedy. It appears, from the history of this mode of practice, which was first applied in a very imperfect manner, that Dr. Gales was so fortunate in curing psora and scabies as to arrest the attention of the medical and civil officers attached to the Hospital of St. Louis, where Dr. Gales pursued his method, and where he had held the situation of "pharmacien" in chief for the previous twelve years. The method became no sooner observed by the officers alluded to, than it was considered a great improvement in the mode of curing those diseases, as regards the time, the economy, the manner, and the certainty of its effects. The first step necessary, in the opinion of those gentlemen, was to invent a more convenient way of exposing the surface of the patient's body to the influence of medicated gas, aided by increased heat. This object being attained by the ingenuity of Dr. d'Arcet, the patients became cured with less inconvenience to themselves and the attendants, by a mode perfectly cleanly, and in a shorter period than that required by the method of Dr. Gales. It was not till after this improvement in the mode of administering the sulphurous acid gas that its value, in a curative point of view, became forcibly impressed on the minds of the gentlemen observing the benefits resulting from its application. So forcible was this impression, as to occasion a representation of its effects to be laid before the Faculty of Physic at Paris for its consideration: the latter, feeling the respect that was due to the characters representing the measure, formed from amongst themselves a committee to investigate the powers of the remedy in question, in order to discover, with more precision, the subject recommended to their consideration. During this investigation, it was found that diseases, totally unconnected with scabies or psora, with which some of the patients were afflicted, as rheumatism, sciatica, scrofula, and chronic diseases in great variety, were some of them cured even before the skin diseases for which the patient took the fumigations; and for which it had not been in the least anticipated that they would receive benefit.

The result was so unequivocally acknowledged, and the advantages of this method of curing many diseases was so decided, as to occasion a further representation of its effects to the official authorities of Paris; and they likewise recommended Dr. Gales as deserving a retiring pension for his perseverance and invention. The same authorities saw the great saving of expense it would be to the state, as respects food, linen,

washing, and medicines, from its not requiring the patients to remain long in the hospitals; and pointed out the applicability of the method to all large establishments, as hospitals, poor-houses, prisons, barracks, the rear of armies, and hospital or troop ships.

Time has yet to show the further importance of this great medical agent: its great usefulness for the relief and cure of many obstinate and painful diseases is daily becoming more apparent. Mr. Green, an experienced practitioner, has devoted much attention to the subject: from his observations and practice more important facts may be expected, and certainly much remains yet to be developed.

Already has Mr. Wallace proved its general utility; and, in liver complaints and some other diseases, has found fumigation with the chlorine acid gas of the greatest advantage; indeed, he is inclined to give the preference to the chlorine in many cases where the sulphurous acid gas has been so decidedly approved, particularly in liver complaints.

This remedy has been adopted throughout the whole of the continent of Europe, with a celerity bespeaking its deserts, as a curative itself for several complaints; but, in most, to be considered as an auxiliary of the first importance. This country has seldom been backward in admitting improvements in the sciences and arts, let them be elicited from whatever source they may; but, on the contrary, she has been most conspicuous in her example of unwearied industry and inventive talent. How is it then, I would ask, that so great an improvement in the science of medicine should have been so evidently overlooked by the Profession of England? This question can be readily solved. The practice was introduced in an empirical manner into this country; and it required time, and the good sense, as well as the science of the Profession, to rescue it from the station in which it was so undeservedly placed.

I have been led into this detail in consequence of the benefits that have been received by the patients for whom I have prescribed the remedy; which benefits have been such as will induce me to resort to the practice, as an auxiliary of great power, whenever cases requiring it shall come under my care; especially as I have now the opportunity of doing so under the superintendence of Mr. Green, a regularly qualified member of the Profession, and who is also an accurate observer: and I have no hesitation in saying that any of the Profession wishing their patients so valuable an auxiliary, particularly in several chronic diseases that come before them, will have reason to be satisfied with the result. The usefulness of the practice, as a preventive of disease in great establishments, cannot be too much enforced. The avidity with which some govern-

ments on the Continent have enforced so salutary a remedy, as a matter of the first statistical importance, will sufficiently substantiate what I have advanced.

Case of perfect Hymen at the full Period of Utero-Gestation. Communicated by WILLIAM BRENNAND, Esq., Member of the Royal College of Surgeons, London.

(From the London Medical Repository for May, 1824.)

In giving publicity to the following case, I shall confine myself to a simple statement of it.

March 4th, 1824.—My attendance was requested on H. B., aged twenty-nine, in her first confinement, at the full period of utero-gestation. On making an examination, I discovered an unusual impediment to the passing of my finger into the vagina, when the mother of the patient, who is a midwife, perhaps discovering an appearance of surprise in my countenance, called me aside, and gave me the following information:—

A fellow servant having determined on her seduction, attempted to effect his purpose, but was resisted, and, as *she believed*, effectually. She made known the affair to her family, and was immediately taken to a respectable Practitioner in the neighbourhood, who pronounced her, on examination, to have escaped all personal violence, and that the parts were in a perfect state.

Her health and appearance became affected, and her figure altered. On being again questioned by her friends, she positively denied ever having had connexion with any man. Their fears increased with her increasing size; and, on taking her to an eminent lecturer on midwifery, he immediately confirmed their suspicions, but, at the same time, declared the parts to be uninjured. I cannot do better than to give his description of them, contained in a certificate given to the friends of the young woman, and dated December 16th, 1823, which removes all doubts that might otherwise suggest themselves of its being a morbid adhesion of parts, which, we know, sometimes occurs after severe parturition.

"The hymen in this case is infundibuliform, completely unbroken, and so small in its aperture, that an organ of ordinary size could not pass without rupture. This case clearly proves that complete penetration of the male organ into the vagina is not essential to impregnation."

On making a more minute examination, I found the parts as described, the hymen unruptured, with a small aperture barely sufficient to admit the point of my fore-finger, which barrier,

without difficulty, gave way to the dilacerating power of my fingers. The labour proceeded slowly; and, when the head of the child, with the face inclined towards the pubis, descended into the pelvis, it became so firmly impacted as eventually to require artificial assistance. The attendance of Dr. Ramsbotham was requested, when it was deemed most advisable to open the head, which was immediately done with his usual ability.

Case of Fracture of the Cranium, with Depression. By John Ripley, Esq., Whitby, Licentiate of the Royal College of Surgeons, Edinburgh, and of the Society of Apothecaries, London.

(From the Same.)

On the evening of June 3d, 1823, I was requested to visit William Miller, a boy of seven years of age, residing at Cockmill, about two miles from Whitby. The messenger informed me that the boy had fallen from some bushes overhanging a precipice on the bank of the rivulet adjoining the mill, a perpendicular height of about thirty feet—that he had been taken up in a state of insensibility, and that he had received a considerable wound on the back part of the head, from which he was bleeding very profusely. On my arrival, I found that the boy had, in some degree, recovered from the immediate effects of the fall; but on inspecting the wound, I discovered a fracture of the upper part of the left side of the os occipitis, extending across the lambdoidal suture, and including a portion of the left os parietale, with considerable depression of the fractured portions. After enlarging the wound of the integuments by free incisions, to enable me to ascertain the nature and extent of the injury, I proceeded to remove the depressed fragments of bone, which, with the assistance of Hey's saw and the elevator, I readily succeeded in accomplishing, without the use of the trephine. Having carefully removed all the depressed portions and loose spiculæ of bone, and cleared the wound, the divided integuments were brought together, and secured with adhesive plaster and a bandage.

During the operation, the boy recovered his sensibility and voluntary powers so far, as to require considerable restraint to prevent interruption.

Having enjoined the exclusion, as much as possible, of all stimuli, external as well as internal, I took about eight ounces of blood from the arm, and directed a cathartic of jalap and calomel to be given early the following morning.

4th, eight o'clock, A. M.—The patient had slumbered a good deal during the night, and did not complain of much pain; the heat of the surface was, however, greater, and the pulse had increased in frequency since the preceding evening. The tongue was covered with a brownish fur, and he had much thirst. Cathartic, given at six o'clock, had not operated. He was again bled from the arm to the amount of several ounces, leeches were applied to the temples, and the bandages on the head directed to be kept constantly wet with cold water. He also took small doses of an antimonial saline mixture every two or three hours.

5th.—This morning I was informed that he had passed a restless night, though he had not complained of much pain. On dressing the wound, I found its edges uniting, except in the middle, where there was a partial loss of integuments. The patient appeared quite conscious, but complained of vertigo on being raised up. The leeches had bled well; but as no effect had been produced by the cathartic, a common enema was administered, which produced an immediate and copious evacuation.

6th.—This morning he was much better, having slept during the greater part of the night, and the febrile symptoms had considerably abated. A small fungus now appeared at the bottom of the wound, proceeding from a trifling laceration of the dura mater, occasioned by the sharp edge of one of the depressed portions of bone. The fungus seemed for several days to have a tendency to increase rapidly, but was prevented from attaining any considerable magnitude by means of slight compression, kept steadily up with dossils of lint and adhesive straps. The healing process was, however, so much impeded by it, as to require nearly three months for the complete cicatrization of the wound.

Case of Strangulated Crural Hernia. By JOHN RIPLEY, Esq. Whitby, &c. &c.

(From the Same.)

Mary Theakston, a widow, aged forty-nine, the mother of several children, of a spare habit, was attacked, on the 22d December, 1823, whilst engaged in washing, with nausea, vomiting, and severe pain of the abdomen, attended with a degree of difficulty in passing her urine. Having repeatedly suffered under similar symptoms, which she attributed to *gravel*, she had taken some oil of turpentine, her usual remedy on such occasions. The sickness and pain of the

bowels increasing, on the following day (the 23d) she had an enema administered to her by one of her neighbours, but without effect. On the morning of the 24th my assistance was requested. She then complained of incessant sickness and vomiting of bilious matter, severe twisting pain about the umbilicus, with considerable tension and tenderness, on pressure, over the abdomen, and great exhaustion. Suspecting the existence of hernia, on examination I discovered a small tumour situated over the crural aperture of the right side, which she said had existed for several years, but that it had always, until the present occasion, retired spontaneously, or with the assistance of a little pressure as she lay in the horizontal posture.

Since the commencement of her present symptoms, it had increased in size and become painful, and she was now unable to reduce it as formerly. Being now convinced of the nature of the tumour and of the existence of strangulation, I made an attempt to reduce the hernia by the *taxis*, in which, however, I could not succeed. Shortly afterwards, she was bled from the arm *ad deliquium*, and the attempt at reduction repeated, which likewise failed. She became, however, much easier—probably from the bleeding, and remained so until the following evening (the 25th), when the retching and other symptoms of strangulation returned with increased violence. A tobacco enema was now administered; and, during the languor and depression produced by it, the taxis was again tried, but without success. It was now determined to try the effect of a warm bath, and measures were taken for procuring one as speedily as possible, while, in the mean time, an evaporating lotion was directed to be constantly applied to the tumour. She also took a pill, containing two grains of opium and four of calomel. Finding no improvement on visiting her early the following morning, I again bled her from the arm, until she became faint. She was then immersed in the warm bath, in which she remained in a state approaching to syncope for nearly an hour, a persevering attempt to reduce the hernia being made at the same time, but still without effect.

The symptoms of strangulation increasing, she now began to vomit feculent matter, her countenance became flushed, her pulse small, rapid, and irregular, and great debility and exhaustion had supervened. Having no prospect of relieving her by any other means, I proposed the immediate performance of the operation to her, as the only probable chance of saving her life, to which she readily consented.

The superficial fascia, which was very thin, was partly exposed and partly divided by the first incision, commencing about an inch above, and extending downward and rather inward over the whole extent of the tumour. The fascia propria

and hernial sac, with which the intervening cellular texture were so much condensed and thickened, and so closely in contact with the strangulated intestine, that I found it necessary to divide them at once by a very cautious dissection. No fluid escaped on opening the sac, which contained a small diverticulum of intestine, very much inflamed, and of a dark brown colour. The stricture appeared to be formed chiefly by Gimbernat's ligament, and partly also by the neck of the sac, which I therefore divided together, with a probe-pointed bistoury guided by the director, in a direction upward and inward, after which the intestine was reduced with great facility. A considerable quantity of serous fluid escaped from the abdomen immediately after the return of the intestine, and continued to flow for some time after the edges of the wound had been approximated by the interrupted suture and adhesive straps. In a few minutes after the operation the patient passed an offensive scybalous stool, with much flatus, after which she became much easier. On repeating my visit at eight o'clock in the evening, I found her much better, her retching having ceased, and her pain considerably abated. She had passed another copious alvine evacuation.

27th.—The patient had slept a good deal during the night, but was disturbed towards morning with torminal pains, followed by another copious dejection. She still complained of much pain and tenderness over the regio pubis.

28th.—Was much disturbed during the night by severe griping and diarrhœa. As the pain and tenderness of the abdomen continued, eight leeches were applied over the *hypogastrium;* and in the evening, as she had been much distressed by the tormina and purging, I directed an opiate enema to be exhibited, from which she experienced great relief.

29th.—This morning I found her much better, the pain and tenderness of the abdomen being nearly gone, and she had slept well.

30th.—She had again been troubled with the torminal pains and diarrhœa, but her pulse was moderate, and her febrile symptoms inconsiderable. On dressing the wound this morning, I found it looking healthy. In the evening, as the pain of the bowels and purging continued, I ordered another opiate enema to be given, which again relieved her.

31st.—Had not slept much during the night, but she complained of little or no pain or tenderness over the abdomen, and was nearly free from fever. From this time she recovered rapidly, the wound being completely healed in about a fortnight after the operation.

Unusual Case of Priapism. By THOMAS CALLAWAY, Esq., Member of the Royal College of Surgeons, and Surgeon to the South London Dispensary.

(From the Same.)

On the 17th of March, 1822, I was requested, by my neighbour Mr. Ravis, to visit A. B., a healthy, muscular man, aged forty-four, under the following circumstances:—

On Saturday night, the 8th of March, he came home inebriated, and had connexion with his wife three times during the night, without its producing the consequent collapse of the penis, although emission each time ensued; the penis remaining firmly erect during the following day, Monday, and Tuesday. On the Wednesday, when I was called to him, the organ was then erect, and without pain (except on very firm pressure): twelve leeches were applied, fomentations of hot water directed, and brisk cathartics used. The hip bath and venesection, *ad deliquium*, were also ordered, but without producing any effect. On the 17th, the priapism was as complete as when the attention of Mr. Ravis was first directed to it; the two corpora cavernosa were distended and extremely firm; the corpus spongiosum was not turgid; and the glans penis was soft and yielding. Finding that local measures had no effect in reducing the tension of these parts, we had recourse to nauseating doses of tartar emetic, and these were continued for two days, with a cold lotion of muriate of ammonia and nitrate of potash to the part, but without the slightest variation supervening. The whole class of narcotics, as conium, hyoscyamus, opium, &c., were ineffectually had recourse to; the tobacco enema was also administered, which, although it produced its full influence in lowering the vital powers, pulse, &c., had not the slightest effect on the penis: the mercurial ointment, with camphor, was rubbed in twice a day for several days, until ptyalism was induced. Still the penis remained as firm and turgid as before.

On the 24th, being the sixteenth day of the duration of the erection, an opening, with a lancet, was made into the left crus of the penis, below the scrotum, and a large quantity of dark grumous blood, with numerous small coagula, escaped. By pressing the penis, the corpora cavernosa were immediately emptied, and each side became flaccid, the communication by the pecten allowing of the discharge of the contents of both corpora, by the incision into the left crus, without there being a necessity for an opening into each of the crura. For several days the aperture continued to discharge blood mixed with pus into the poultices which were applied to the part, and which was the only after-treatment necessary, as in a few days the man was able to follow his avocations.

I have seen him within the last month; he has remained quite well, but informs me that he is impotent, the organ continuing collapsed, and no erection having been since produced, nor has it been acted on by venereal excitement: consequently it is not subservient to the purposes of procreation; this is most probably occasioned by a deposition of coagulable lymph in the cells of the corpora cavernosa preventing the admission of blood, and consequent distension of the organ.

It may be remarked, that at no time during the existence of the priapism was there any difficulty in passing the urine.*

Case of Obliterated Urethra, successfully treated with Lunar Caustic. By WILLIAM MACLURE, Surgeon, Glasgow.

(From the Edinburgh Medical and Surgical Journal for April, 1824.)

SECT. I. *Introductory Narrative.*

D—— N——, aged 40. Sixteen years ago this man contracted a gonorrhœa, and, at the same time, chancres on the lower surface of the glans penis. He consulted an old physician of this city, now dead, who in a few days cured the clap, and then began to apply escarotics to the external sores, taking care, at the same time, to exhibit mercury. Shortly after this period a bubo in each groin made its appearance. That on the left side was repelled by leeches and cold applications; but the leeches refusing to sit on the other, it suppurated, burst, and discharged matter. Mercury was still continued to be given, and in such doses, that it at last brought on a severe ptyalism. During six weeks he remained in Glasgow under this treatment without amendment, but rather the reverse. The bubo became deep and spreading; the chancres did not heal, but increased in size; and, at the end of that period, had consumed a considerable portion of the under surface of the glans.

He now left Glasgow and went to Fifeshire, where he put himself under the care of a Surgeon in Kinross. During a stay of four months here, the same plan of treatment was pursued. The constitution was kept under the influence of mercury, and the sores were dressed with dry lint. In spite of all this, however, the ulceration in the groin spread upwards and downwards, and that on the penis became more and more extensive.

Disheartened and alarmed at this state of things, he left Kinross, and removed to the Edinburgh Royal Infirmary. There the sores were poulticed; mercury was discontinued; tonics and a nourishing diet were used in its stead. Still, however, the

* See Dr. Moore's Case, in the Medical Recorder, No. 1. vol. vi. The priapism lasted *twenty-three* days, and, after various modes of treatment, was reduced by continued applications of bladders filled with cold water.

disease was not arrested—the ulceration persisted in its ravages. On the penis, the whole frenum, with the lower segment of the glans, was destroyed; and the urethra was exposed down to the inferior insertion of the *frenum preputii*. In the groin, things looked no better; for here the phagedena extended downwards betwixt the upper part of the thigh and the scrotum, and along the perinæum, until it reached a point situate about an inch and a half from the anus. All this time the scrotum remained unaffected, and the discharge of urine along the urethra was quite free and unattended by pain. As might be expected, however, pain in the ulcerating parts was great, and the constitutional irritation proportionable. Now, mercury was again had recourse to. The mouth was made gently sore by its means; and after using it about a month, the sores began to improve. The improvement advanced slowly until the sore on the penis became cicatrized; and that in the groin and perinæum gave promise of being in due time in the same favourable state. The constitutional irritation was abated, and every thing looking well, when, without previous warning of such an event, and whilst he was attempting to make water, the urine one morning burst out suddenly from an opening in the perinæum, or rather in the angle formed by it and the upper part of the thigh, at a point rather less than half the distance betwixt the testicle of the right side and the extremity of the rectum. Since that time till lately, a period of nearly sixteen years, his urine continued to flow by this fistulous opening, and not a drop found its way by the natural passage.

Soon after the event which I have detailed, he was discharged from the Infirmary, and desired to retire to the country, in the hope that fresh air would be more conducive to the healing of what remained open of the sore in the perinæum, than the diseased atmosphere of the best regulated hospital. Here, the sore was soon cicatrized; the fistulous opening acquired a sound smooth skin; and his urine passed freely by it, without giving him the smallest pain or uneasiness. Twelve years after these events, a small abscess burst from the urethra immediately above the scrotum; but it healed up instantly without giving him farther trouble. This, he imagined, was occasioned by the irritation of a solution of the sugar of lead which he injected into the urethra on account of some heat and pain which he felt in that tube; but it is more likely that the heat and pain arose from the abscess forming, than from the very innocent means which he took to allay or remove them.

It may be proper, at this stage of our narrative, to mention, that our patient, soon after the ulceration had healed up, married a young woman to whom he had been affianced before his disaster; and that to the author he frequently declared, that he,

apprized her, in as delicate a way as possible, of his impotence previous to their nuptials; but that she refused to permit this circumstance to operate as a sufficient reason for retarding or preventing what had once been agreed upon. He likewise confessed, that he frequently attempted, after his marriage, to pay the conjugal debt; and that, though the seminal fluid was always discharged through the fistula, his sensations from the act were similar to what they were previous to his misfortune, and to what he supposed other men to experience whose organs remain as they came from the hand of Nature. But enough of this.

SECT. II. *State of Parts when the Patient applied to me.*

From the foregoing statements, the reader will, it is presumed, be at no loss to understand what was the exact state of this man's genitals when he applied to me, in the hope of having them restored to their natural state and functions. Externally, the lower segment of the glans was wanting;—the cicatrix of the ulcer which had been in the groin and perinæum was very manifest;—and the orifice of the fistula, with its glistening lining membrane, was seen in the situation which I have already marked. Internally, a bent probe or small bougie could be introduced by the fistula backwards into the bladder; but it was found impossible to direct such an instrument forwards towards the glans penis, on account of its being immediately opposed by the kind of *cul de sac* by which the anterior part of the urethra terminated. A catheter or bougie might be* introduced by the orifice of the urethra, and carried downwards to the obstructed part, which was situate from four to five inches down in the canal, and seemed to occupy, as near as I could judge, about an inch and a half of the tube. The patient is a little man, and, according to my most accurate admeasurements and calculations, the obliteration (for it was not stricture) occupied the place of the bulb, and perhaps a small portion of the membranous part of the urethra.

It may well be asked how could so much as an inch and a half of the canal be obliterated in so short a space of time as one night, the period which, by the patient's account, intervened between the time when he transmitted his urine freely along the whole course of the urethra, and that when, refusing to be propelled forwards, it suddenly burst out by a fistulous opening

* It has been asserted, that the urethra, like the other mucous tubes of the living body, if its function be "for several years" suspended, will lose calibre, and ultimately be obliterated. But though the function of the fore part of this man's urethra had been completely suspended for sixteen years, this doctrine received from it no illustration. Vide page 89 of "An Essay on the Diseases of the Excreting Parts of the Lachrymal Organs, by William Mackenzie. London, 1819." An elegant and useful little compendium.

in the perinæum? To this inquiry it may be answered, that it is by no means necessary to suppose, that the obliteration, to its whole ultimate extent, took place in the short period specified; or even that it had done more than barely commence when the patient made water that morning. We sufficiently account for the fact of the urine coming by the perinæum when we state, what undoubtedly was the case, that the ulceration had penetrated so deep as to destroy the continuity of the lower side of the urethra at a particular point; and that the urine, finding such breach or outlet, and likewise some resistance to the *nisus* which it made to go forward as before, took the readiest and freest route; and therefore came into day by the ulcerated opening in the perinæum. The subsequent steps of the obliterative process were probably the following. They consisted, I doubt not, *first*, of ulceration of the mucous membrane of the urethra to an extent equalling, if not exceeding, that portion of the tube which was ultimately found to be obliterated; *secondly*, of adhesion to one another of the sides of the tube, thus denuded of its mucous membrane, to an extent comprising the whole, or, at any rate, a considerable part of what was found afterwards to be obliterated; and, (if we suppose the obliteration not to have been *wholly* owing to the adhesive process after the phagedenic ulceration had ceased); *thirdly*, of granulation, or the formation of solid new flesh in the place of that which had been destroyed by ulceration, thus completing what was left undone by the adhesive process. When the urine first issued from the perinæum, perhaps neither adhesion nor granulation had done more than barely commence; at this period, probably, no more than simple destruction of the inferior side of the urethra at a particular point had taken place; and, it is more than probable, therefore, that had a bougie, or sound, or catheter been then introduced into the urethra, it would have met with little or no obstruction to its progress onwards to the bladder. But this very obvious expedient, so far as I have learnt, having been neglected, and no local means adopted to prevent the closure of the canal at the ulcerating point, adhesion went on, and granulation went on, until a firm and impenetrable obliteration took place at the point, and to the extent which I have already condescended on.

Sect. III. *Possible Modes of Treatment.*

Such was the condition of this individual when he consulted my late partner and me in November, 1822. After we had examined it with much care, it was matter of grave debate whether the case ought to be meddled with at all; whether he ought not rather to submit patiently to the inconveniences which he had sustained so long, and become so much accustomed to,

than endanger the perfect health and moderate comfort which he enjoyed by a doubtful, painful, and, at best, tedious attempt to redress his grievances; whether, in short, it would not, upon the whole, be wiser in him "to bear the ills he suffered than blindly rush on others which he knew not of." Impotence, in fact, was the only real evil which this man laboured under;—he could retain and discharge his urine with nearly as great facility as any man; with this difference only, that instead of presenting the pot-de-chambre before, he was obliged to place it between his thighs; there was no disagreeable discharge from the fistula, it was quite whole and presented as good an orifice as that of his urethra *behind* the glans;—his health, as has been said, was good; his sensations from the *coitus* were exquisite as other men's.

It was urged, on the other hand, that the patient was still far from being old, that he was willing to undergo almost any degree of suffering to be made like other men—that the resources of art were now numerous, and, wielded by skilful hands, were in modern times remarkably successful; that the case in some respects was perhaps unique, and presented a tempting opportunity of assaying the restorative powers of one or more of those agents, the advantages and dangers of which are still the subjects of much disputation; and, finally, that if *we* should be so deficient of courage as to recoil from the enterprise, the state of the patient's mind left us little reason to doubt that another of the profession would soon be applied to, who, more sanguine of success, and bolder in the application of his resources, would dare the hazards of the experiment, and fortune, generally propitious to the adventurous, might reward with success his manly and generous endeavours.

The latter train of reasoning prevailed, and it was resolved to commence forthwith some plan of treatment. It was doubtful, however, which of the methods at present in use among the profession of remedying states of parts similar or analogous to that which I had to encounter ought, in the present case, to be adopted. The disease was obliteration, not stricture. It possessed, no doubt, several features which allied it to the family of strictures, but still it had others, and these of considerable importance, which distinguished it from them. In stricture, an obstruction only of the canal exists, arising from an approximation of its sides to a smaller or greater extent, which again is caused by a morbid deposition of new matter upon, or within, that which originally formed the healthy parietes of the tube. Here, there was complete obliteration of a part of the urethra, not, as in stricture, from an accretion of new matter, but in consequence of a destruction of its original and healthy structure. Notwithstanding this marked discrepancy between the two cases,

however, the points of resemblance were still numerous and close enough to determine us not to seek for any novelty in the nature of our proposed operation, but to content ourselves with using one or other of those agents whose powers in the treatment of stricture have been more or less illustrated by surgeons of reputation and experience. These are, first, the caustic bougie, as recommended by Sir Everard Home; second, the scalpel and catheter, as used by Mr. Charles Bell and other surgeons in particular cases; and third, Dr. Physick's species of bent trocar and canula.

In such a case as I had to deal with, it is obvious that the common bougie is useless, except as the auxiliary of other agents; for here a new passage was to be made, not an old one dilated.

An objection almost insuperable to the use of the scalpel, as employed by Mr. Bell* in the case of Huggens, was, that the scrotum and testicles were suspended like a curtain over the very part which it was necessary to cut down upon. And besides this, I confess that the difficulties which this able surgeon experienced, and the dangers which his patient incurred, both during the operation, and in the after treatment, would deter me from imitating his example in any case where another plan might be pursued, notwithstanding the great, though partial, success which at last rewarded his boldness and skill. This method, then, which consists of introducing and pushing a sound or catheter down to the obstructed part; of cutting down upon it and dividing the obstruction throughout its whole length; then, of pushing on the catheter to the bladder, retaining it there, and allowing the external wound to granulate and close over it, may, with propriety, perhaps, be adopted in some rare cases; but, for the reasons which I have stated, I did not think it a fitting operation in the one before us, and therefore, in consultation, I opposed its being adopted.

Dr. Physick's proposition I think well of, and imagine that it may be practised with signal advantage in impassable strictures of small extent, and where there is no choice, as often happens, except betwixt it and puncturing the bladder. In a case, however, such as N.'s, where the obstruction was of extraordinary length, and where the urine had abundant outlet by a fistulous opening, I conceive that a more gradual and perhaps less hazardous mode of restoring permeability to be the more commendable operation; and that the objection which Dessault urged against the caustic may be opposed with far more cogency to Dr. P.'s plan. "On ne peut disconvenir," says he, "que ce moyen ne soit tres-ingenieux; mais qui garantira que ce 'tro-

* Treatise on the Diseases of the Urethra, &c. page 260.

car'* agira toujours dans la direction du canal, qu'il ne percera pas ce conduit, et ne formera pas de fausses routes?"†

For these reasons, both the foregoing modes of proceeding being rejected, the only other which remained, viz. the use of armed bougies, was what was resolved on as being the most likely to combine the advantages, if not of ease and rapidity, at least of safety and success. But not wishing to take the whole responsibility upon myself, I was anxious that the case should be submitted to the inspection of my friend Dr. King, who, as soon as he had examined it, and without knowing what had previously been determined on, at once said, with his usual acuteness and celerity of judgment, "This is an admirable case, Sir, for a trial of the caustic."

I am well aware of the antipathy which the French surgeons, with some exceptions, continue to entertain against the use of caustic in diseases of the urethra. I know too, that Dessault succeeded in terrifying his own imagination, and likewise attempted those of the profession, by calling this most useful substance "la pierre infernale;" but the authority of great names, as well as of ill names, when opposed to the dictates of experience, is, I trust, now abolished for ever; and the degree of experience which this great surgeon had acquired of the dangers of the caustic may be learned from his own candid confession that "nous n'avons jamais osé faire usage de ce moyen; quoique ce praticien (Hunter) nous assure en avoir obtenu des succes qui ont surpassé ses esperances." With respect to caustic, therefore, the authority even of Dessault ought to have but little weight; the experience of Hunter and of Home is worth an infinite series of such authorities.

But even in Britain, opinions hostile to the use of caustic have often been promulgated; and if we may judge from the floating and unedited sentiments which are prevalent among the surgeons of this city, the application of this powerful agent to obstructions of the urethra must and ought to yield altogether to the employment of the various kinds of dilating instruments. I do not intend, however, at present, to enter into this important discussion; and will restrict myself to saying, that, so far as my experience extends, there is no agent with which I am acquainted, that in its real and positive effects upon the living body, so completely contradicts and belies all hypothetical and *a priori* reasonings respecting it, as does the lunar caustic. Beforehand, we are apt to imagine, that when brought into contact with a chronic and indolent diseased mass, it will rouse such a part to a high and painful state of excitement, and if presented to an irritable and inflamed part, it will exalt such irrita-

* "Caustique" apud Dessault. † Œuvres Chirurgicales, tome iii. page 246.

bility and irritation to their most unbearable and dangerous degree; whereas the truth is, that in both cases (I speak advisedly) although a sensation of heat or pain more or less smart is unquestionably felt at the moment of applying it, yet when the application *is continued long enough*, its mode and period of action are so exceedingly safe and mild as to justify me in calling it a sedative escarotic, and in soliciting for it a fair trial from all those who may be disposed to condemn untried so very valuable a resource in the treatment of urethral disease.

But there are other surgeons who, admitting the great utility of caustic in destroying "the firm and sharp stricture of small extent," condemn its use in "diseased narrowings of the canal, extending to half an inch or an inch in length, and irregular in their course;" who shudder at the idea "of boring with the armed bougie through the firm strictured part of the canal for so great a length, when the surrounding parts are comparatively loose."* Now I will not attempt to oppose these *dogmata* of the metropolis by any thing like hypothetical reasoning, but rather proceed to lay before the profession a detail of my manipulations with the caustic in N.'s case, in which the obstruction was much more extensive than the greatest which Mr. Bell contemplates; and, in reference to caustic, if there be any analogy between stricture and obliteration, the complete success which ultimately crowned my exertions will, it is presumed, go some length to remove the prejudice which Mr. Bell's high authority must have excited against its employment in strictures of great length and firmness.†

Sect. IV. *Remedial Measures which were adopted.*

The remainder of this paper is extracted almost verbatim from my note-book, written at irregular intervals during the progress of the cure, just as any thing remarkable, either with respect to fact or reflection, occurred to me. I might have revised the whole, and given the facts and observations which it contains a different order from what they at present assume; but I question much if I would not, by such an attempt, have

* Vide Mr. Bell's Work formerly quoted, p. 133, 134.

† When Dr. King was consulted in this case, he grounded his opinion as to the propriety of using caustic for its cure on the success *he* met with in one of a somewhat similar nature which he had formerly treated. It was an impassable stricture of great length and firmness, complicated with much loss of substance, and fistula in perinæo. He employed caustic to re-open the passage, and the patient did well. None of the mischiefs which Mr. Bell, and other surgeons dread, were experienced here. We, perhaps, therefore, do not generalize too fast, when we say that caustic, under proper restrictions, care and circumspection, may, with safety, always be employed in instances of *extensive stricture*, as well as of obliteration; certainly not, however, to exclusion of dilating instruments in the great majority of cases. The entire safety of caustic in long and firm strictures, a point which is disputed, is all I contend for.

curtailed much of their utility and interest. In the narrative of a case, I like to see every thing set down immediately after it has occurred, with the hopes and fears which the ever-varying aspect of affairs may have raised in the mind of the practitioner. In this way, we are admitted, not only into his surgery, but his mind; and as a fact or an idea set down at the moment of its occurrence is worth a cart-load of recollections, the result in point of instruction is infinitely to be preferred to the cold, sometimes glozed, and often constrained, subsequent lucubrations of the study.

1822. Nov. 15. After having explored the passage, by means of a common bougie, an armed one, well oiled, except at its very point, was slowly pushed down to the obstructed part, for the first time, to-day. It was kept applied during two minutes after a sense of burning pain was felt, and then withdrawn. The pain was inconsiderable at the time, and soon went off. On the second morning after applying the caustic, the patient, by squeezing the penis and bringing his finger and thumb forward to its extremity, forced out a small bit of slough and a little thickish dark-coloured pus.

17th. It was determined to allow a day to intervene between every application of the caustic and the next one. The same process was therefore gone through to-day, and with exactly the same results. There is little heat, and no swelling about the penis. The caustic gave very little pain, and even that was gone, or nearly so, before the patient left the surgery.

But really there is so great a sameness in the nature and complexion of my notes after this period till the 16th January, 1823, that it would be tedious, and perhaps not very useful, to copy any more of those which relate to that period—a summary of them will perhaps answer every good purpose. Suffice it to say, then, that the armed bougie was introduced about thirty different times, that is, once every second day for the space of two months. Occasionally a small slough came away, loosened sometimes by the common bougie, upon the second day after the caustic had been applied—but this did not occur often—more generally the thick dark-coloured fluid formerly mentioned was all we observed as the effect of the caustic. The progress was rapid. I soon felt a roughness at the obstructed part; and, after a considerable number of applications of the caustic, there was a feeling communicated to my hand as if the point of the bougie made a kind of leap from the old beginning of the obstruction, through the new opened portion, to the part which was still obstructed. Besides these particulars, nothing remarkable occurred till one day (16th January, 1823) the bougie evidently passed onwards to the bladder. It was then withdrawn, and a small silver catheter was attempted to be intro-

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duced; but this, from the terror of the patient, and the caution which I deemed it necessary to exercise, was found to be impossible. Dr. King had requested to be informed of our progress from time to time. We therefore called on him. He likewise attempted to introduce a catheter into the bladder, but, for the same reasons which had restrained myself, he soon desisted. He, however, did not doubt that I had got through the obliterated portion.

January 17th.—To-day I succeeded in getting a catheter into the bladder, and urine was discharged by it for the first time during a period of sixteen years. The patient was overjoyed, and my satisfaction I will not take time to express. His urine was again drawn off in the evening by the same means, it being our intention to permit as little as may be to pass by the fistulous opening.

18th.—The patient complains of pain about the lately obstructed part; and there is a good deal of heat and some fulness in the perinæum. Notwithstanding these symptoms, I attempted to discharge his urine by means of the catheter, but failed. I was obliged to permit him to get rid of it by the fistula. I attribute my want of success to-day to some tumefaction or spasm which may have taken place about the parts in consequence of irritation. His bowels were open by medicine, two grains of opium were afterwards given, and the perinæum fomented with a warm infusion of camomile flowers.

20th.—Pain abated. The urine flows in a free stream by the fistula. It is determined to permit as little urine as possible to come by it in future, so as, by suspending its function, to dispose it to contract, and, at the same time, to accustom the urine to the route of the urethra. For this purpose I attempted to introduce an elastic gum catheter into the bladder. I succeeded, and it was allowed to remain there the whole of this day. In the evening, when the patient strove to make water through it, he could not. It was therefore withdrawn, and it was discovered that the urine had been prevented from entering the instrument by reason of its *foramina* being plugged up by a sort of tough pus or mucus. The small silver catheter was then entered, and urine flowed by it in a free stream. It was kept in during the night of the 20th, and the two following days. When withdrawn, the silver was tinged of a black colour, but I observed not the least tendency to incrustation.

22d.—A larger gum-elastic catheter than the last was this evening inserted. The urine flows by it, and I was gratified even to find that a little came between the catheter and the sides of the urethra. Not a drop allowed to come by the fistula.

26th.—About this time a hard swelling was discovered in the line of the *corpus cavernosum penis* of the right side, over

the ramus of the ischium. To-night it became painful, and the patient had rigors. The catheter was removed, and instantly about two or three ounces of pus, mixed with urine, the patient thinks, rushed out by the proper orifice of the urethra. The swelling immediately fell, and the hardness, in great measure, disappeared.—I am afraid of infiltration of urine into the cyst of the abscess, and therefore have directed the patient to discharge all his urine by the fistula; and, at the same time, by pressure on the perinæum, to prevent any part of it from getting past the internal orifice. Pressure by means of a pad and proper bandage has been applied over the supposed cyst of the abscess.

30th.—The hardness and swelling have disappeared, and no pus has come, since last report, by the urethra, or any other way which I could detect. To-day, in order to prevent the late obstructed part from reclosing, a middle-sized bougie was introduced. It readily passed the new-opened part, but would not, without violence, go on to the bladder. It was therefore taken out, and after it there appeared a very considerable flow of blood. Pressure on the perinæum, and cold applications to the genitals, were prescribed.

31st.—The bleeding continued rather profuse for three or four hours last night, and even persists in oozing a little to day. Cold applications and pressure to be continued. It is evident that my efforts to pass the bougie yesterday had been persisted in too long, or that the bougie itself had been rather large.—If any thing more than another is to be learnt from the occurrence of the hemorrhage, it is the necessity of extreme caution and delicacy in the employment of instruments about the urethra.

Feb. 3d.—Since last report, no attempt has been made to introduce a catheter or any thing else into the urethra, in order to allow time for the ruptured vessel to heal. The patient makes water by the fistula. The bleeding ceased on the first instant. To-day, I attempted to introduce a bougie, and afterwards a small catheter. It was found that the new-made opening through the old obstruction was of less calibre now than before the hemorrhage; for instruments of a size which passed readily then, were pushed on with difficulty to-day. As the pain attending their introduction, however, is not greater, but less, I attribute the increased difficulty of passing them to the contraction which attends cicatrization.—By the daily use of a bougie, I hope to remove this contraction, and to get a catheter of the same size as formerly into the bladder. No more bleeding.

7th.—The urine passes freely, and without pain, through the fistulous opening. The small silver catheter, which formerly passed readily into the bladder, cannot be got, without violence,

duced; but this, from the terror of the patient, and the caution which I deemed it necessary to exercise, was found to be impossible. Dr. King had requested to be informed of our progress from time to time. We therefore called on him. He likewise attempted to introduce a catheter into the bladder, but, for the same reasons which had restrained myself, he soon desisted. He, however, did not doubt that I had got through the obliterated portion.

January 17th.—To-day I succeeded in getting a catheter into the bladder, and urine was discharged by it for the first time during a period of sixteen years. The patient was overjoyed, and my satisfaction I will not take time to express. His urine was again drawn off in the evening by the same means, it being our intention to permit as little as may be to pass by the fistulous opening.

18th.—The patient complains of pain about the lately obstructed part; and there is a good deal of heat and some fulness in the perinæum. Notwithstanding these symptoms, I attempted to discharge his urine by means of the catheter, but failed. I was obliged to permit him to get rid of it by the fistula. I attribute my want of success to-day to some tumefaction or spasm which may have taken place about the parts in consequence of irritation. His bowels were open by medicine, two grains of opium were afterwards given, and the perinæum fomented with a warm infusion of camomile flowers.

20th.—Pain abated. The urine flows in a free stream by the fistula. It is determined to permit as little urine as possible to come by it in future, so as, by suspending its function, to dispose it to contract, and, at the same time, to accustom the urine to the route of the urethra. For this purpose I attempted to introduce an elastic gum catheter into the bladder. I succeeded, and it was allowed to remain there the whole of this day. In the evening, when the patient strove to make water through it, he could not. It was therefore withdrawn, and it was discovered that the urine had been prevented from entering the instrument by reason of its *foramina* being plugged up by a sort of tough pus or mucus. The small silver catheter was then entered, and urine flowed by it in a free stream. It was kept in during the night of the 20th, and the two following days. When withdrawn, the silver was tinged of a black colour, but I observed not the least tendency to incrustation.

22d.—A larger gum-elastic catheter than the last was this evening inserted. The urine flows by it, and I was gratified even to find that a little came between the catheter and the sides of the urethra. Not a drop allowed to come by the fistula.

26th.—About this time a hard swelling was discovered in the line of the *corpus cavernosum penis* of the right side, over

the ramus of the ischium. To-night it became painful, and the patient had rigors. The catheter was removed, and instantly about two or three ounces of pus, mixed with urine, the patient thinks, rushed out by the proper orifice of the urethra. The swelling immediately fell, and the hardness, in great measure, disappeared.—I am afraid of infiltration of urine into the cyst of the abscess, and therefore have directed the patient to discharge all his urine by the fistula; and, at the same time, by pressure on the perinæum, to prevent any part of it from getting past the internal orifice. Pressure by means of a pad and proper bandage has been applied over the supposed cyst of the abscess.

30th.—The hardness and swelling have disappeared, and no pus has come, since last report, by the urethra, or any other way which I could detect. To-day, in order to prevent the late obstructed part from reclosing, a middle-sized bougie was introduced. It readily passed the new-opened part, but would not, without violence, go on to the bladder. It was therefore taken out, and after it there appeared a very considerable flow of blood. Pressure on the perinæum, and cold applications to the genitals, were prescribed.

31st.—The bleeding continued rather profuse for three or four hours last night, and even persists in oozing a little to day. Cold applications and pressure to be continued. It is evident that my efforts to pass the bougie yesterday had been persisted in too long, or that the bougie itself had been rather large.—If any thing more than another is to be learnt from the occurrence of the hemorrhage, it is the necessity of extreme caution and delicacy in the employment of instruments about the urethra.

Feb. 3d.—Since last report, no attempt has been made to introduce a catheter or any thing else into the urethra, in order to allow time for the ruptured vessel to heal. The patient makes water by the fistula. The bleeding ceased on the first instant. To-day, I attempted to introduce a bougie, and afterwards a small catheter. It was found that the new-made opening through the old obstruction was of less calibre now than before the hemorrhage; for instruments of a size which passed readily then, were pushed on with difficulty to-day. As the pain attending their introduction, however, is not greater, but less, I attribute the increased difficulty of passing them to the contraction which attends cicatrization.—By the daily use of a bougie, I hope to remove this contraction, and to get a catheter of the same size as formerly into the bladder. No more bleeding.

7th.—The urine passes freely, and without pain, through the fistulous opening. The small silver catheter, which formerly passed readily into the bladder, cannot be got, without violence,

to pass the old obstructed part; but bougies of a good size, and a pretty large gum-elastic catheter (indeed one thicker than the metallic one), pass it with little difficulty, but cannot, without so much force as would cause much pain and perhaps hemorrhage, be pushed on to the bladder. They seem to stick somewhere about the prostate gland. The patient is now very timorous, and complains when even a safe degree of force is employing. No blood to-day.—I am determined to be cautious;—to introduce a bougie every day as far as I can without violence, in order to dilate the new-made portion of the urethra;—to keep steady pressure applied over the cyst of the abscess;—and to allow all the urine to pass by the fistula, until the urethra has so far recovered from the late accidents as to warrant a serious attempt to pass a catheter on to the bladder.

8th–26.—For some days we suffered great discouragement. I could not get a bougie of the smallest size to enter the bladder. The small silver catheter was stopped at the seat of the old obstruction; and, when pushed with gentle force, it seemed to enter the opening into the cyst of the abscess, and its curve and point were felt out of the tract of the urethra altogether, towards the right side, within the cavity of the abscess. Little hope now remained of success. The patient's spirits sunk, and all our anticipations of a happy cure seemed to be defeated. Next day, however, the patient's courage rallied, and a new attempt to re-open the obstructed passage was determined on. Accordingly, an armed bougie was introduced, and pushed down to the obstructed part, the patient being directed to press with considerable force upon the point where I conceived the opening into the abscess to be, in order that the point of the bougie might not, as the catheter had done, enter it. For the usual space of two minutes, it was held applied to the obstructed part, without producing a sense of burning, and then withdrawn. Next day (16th), there was a considerable discharge from the orifice of the urethra. The silver catheter was introduced, in order to discover what progress has been made by the caustic in destroying the young adhesions. The place where I suspected the opening of the abscess to be was firmly pressed upon, and gentle force was used in pushing on the catheter; the consequence of which was, that the instrument went onwards, through all obstructions, to the bladder, and urine, to our great satisfaction, was discharged through it. Having thus happily succeeded in getting the catheter once more into the bladder, it was judged imprudent for some days to withdraw it, so that its pressure in the urethra might completely re-establish the natural passage. It was accordingly fixed in the bladder by the usual means, so that it could not slip out, and allowed to remain there during the space of five days. The urine came freely through it, and none came by the fistulous opening. The

catheter was, at the end of this period, withdrawn to be cleansed. The patient felt no inconvenience from its presence, but I was afraid of incrustation upon its point; however, there was none. A gum-elastic catheter was judged to be a safer instrument for our present purpose, and one of that kind was substituted for the metallic one. It passed with the greatest ease into the bladder, and was allowed to remain there for other five days. The discharge of mucus from the urethra was at this period considerable, but no appearance of pus, as before, was observed. Pressure was kept up over the abscess. The swelling and hardness in this part are almost entirely gone. When the catheter was withdrawn to be cleansed, the patient attempted to make water by the urethra, and succeeded. He at the same time made firm pressure upon the fistulous opening, otherwise part of it would have come that way. It passed with considerable force and fulness of stream. This experiment, however gratifying, was not often made, as there was still some danger of infiltration into the cyst of the abscess. No pain was felt when the urine was passing by the urethra, which led me to believe that great progress had been already made in the healing of the burnt sides of the canal.

26th.—Every thing appears to be doing well. The patient himself can take out and put in the catheter with perfect ease. The discharge of matter, perhaps of a muco-purulent nature, is considerable. This I attribute to the irritation kept up in the canal by the constant presence of the catheter. I have thoughts of soon giving up the use of the catheter altogether, as the sides of the urethra seem to be quite whole. The employment of common bougies, to keep the passage of its present width, or to dilate it if necessary, will, perhaps, suffice to complete the cure. The urine, I think, might now be allowed to pass wholly, without a catheter, through the urethra; there being no symptom of infiltration when it is permitted to do so, and there is no pain.

March 4th.—Since last report, the urine has regularly, with very few exceptions, been drawn off by means of the gum-elastic catheter, which continues to pass into the bladder with perfect freedom. A pretty large-sized bougie has been introduced two or three times every day, in order to widen the urethra at the old obstructed part. The discharge is very much lessened since we ceased to keep the catheter constantly in the urethra. The patient is out of doors daily. Pressure by means of the pad has been kept up over the cyst. Notwithstanding this, however, that part does not yet appear to be whole; for, this morning the patient discovered a small globule of pus or mucus escaping by a very minute orifice in the perinæum, at the point where the hardness has always existed. When I attempted, by means of a probe, to enter the cyst, I found it difficult to accom-

plish, and therefore desisted. It appears, that, by way of experiment, he lately attempted coitus with his wife; and, what is to me at present unaccountable, not a drop of semen issued by the urethra, all of it having escaped by the fistulous opening in the perinæum. During the act, he applied pressure by his hand over the orifice of the fistula. Pressure applied here prevents urine from getting out that way, and directs it along the proper route, but it has not the same effect with semen.

7th.—All discharge from the urethra has ceased. Pain while making water without the catheter, gone. No discharge from the cyst, either into the urethra, or from the perinæum. The hardness in the perinæum lessening. The only unpleasant fact to be noticed to-day is, that little or no urine will flow by the urethra, without a catheter, unless a bougie be passed immediately before making the attempt: then, but not till then, the water issues in a full and free stream. This proves, either that a morbid, perhaps spasmodic, collapse of the part recently made open, takes place soon after the bougie or catheter is withdrawn; or, that there is a want of consent between the muscles about the neck of the bladder and urethra, which, according to their several functions, retain or expel the urine. The former of these is the more probable cause of the phenomenon; because the urine, upon these occasions, though it will not pass along the whole course of the urethra, flows freely enough by the fistulous opening.

June 8th.—The case has gone on as well as could be wished since the date of last report. As I have already mentioned, the only disagreeable circumstance was, that till very lately, for about two or three hours every forenoon, the urine refused to proceed by the natural passage, unless a bougie was first introduced to the bladder. During the night, morning, and afternoon, it issued freely without the aid of such an instrument. This symptom, I became convinced, arose from a spasmodic contraction of the sides of the recently opened portion of the urethra. To take off the morbid sensibility of the part, which probably caused the spasm, I ordered an armed bougie to be introduced down to the part every day, and to be kept applied to it for about a minute. This operation the patient performed for himself, and the happiest effects ensued. Little pain was felt at the time; but a considerable discharge appeared afterwards. At this date, and for some days past, he can discharge his urine freely, by the natural passage, at all times of the day, without more than the usual degree of pressure. The stream is strong and copious. He likewise has regained the power of transmitting the seminal fluid along the whole length of the natural canal. In doing this, however, he is still obliged to press with considerable force upon the orifice of the fistula.

The case is now reduced to a state, resembling in most points, those instances of unnatural apertures in the urethra, which have been so ably treated, first by Sir Astley Cooper,* and then by Mr. Earle,† upon the principle of transposition. In any attempt which may be made to close the fistula, much light and direction will be afforded me by invaluable cases of these gentlemen; but I may be induced, from its peculiar form and size, to proceed upon a somewhat different plan, at least in the first instance. The opening is so very narrow, that I think an instrument may be constructed upon the principle of a cheese *pale*, as it is called, or of a wright's *wimble;* which, being introduced into the fistula, and turned round, first the one way and then the other, will, I imagine, so denude its sides of skin, as to make their adhering to one another, when pressure is applied, almost a matter of certainty. Should this plan fail, however, the actual cautery, now so much employed by the French, or the nitric acid, as used by Sir Astley Cooper, will, I think, infallibly succeed; and if all these resources disappoint us, we have still the Taliacotian method in reserve.

15th.—Two days ago, I understand, my patient found it necessary to leave town, under circumstances which exclude all hope of his return to his wife and friends; but which prove, in the most conclusive way, the completeness of the cure, and his perfect confidence in his restored virility.

The details of this not unimportant case, have already been drawn out to such a length, that I have left myself no space to indulge in those general reflections which naturally arise out of its history; but this is the less to be regretted, as almost every thing of a practical nature has been at least glanced at, as we advanced.

Glasgow, 6th February, 1824.

Political Medicine.

Dr. Castaing.‡ Most of our readers must have perused the afflictive trial of Dr. Castaing in the public papers, and have probably made up their minds as to the justice or injustice of the sentence. In the interrogations put to this unfortunate or guilty physician, he admitted that he had made toxicology his study—that he was acquainted with certain vegetable poisons, which left no trace of their action—that he had purchased acetate of morphine to make experiments on animals—

* Surgical Essays, Part II. p. 207, published in 1819.
† Philosophical Transactions, Part II. for 1821.
‡ London Med. Repos. No. 1, New Series.

that one of the persons deceased had drunk some hot wine in an inn with him—that a servant who tasted the wine found it sour—that the deceased had vomited—that he (Castaing) had mixed the acetate with an emetic substance for the purpose of experiments.

Whether the moral or circumstantial evidence was strong, does not appear. The medico-legal evidence was decidedly in Castaing's favour; thus, Laennec deposed, that the deceased might have died of a phthisical complaint—though the symptoms might have been produced by poison—which he was inclined to believe the case. Dr. Michel believed that death was owing to phthisis and not to poison. Dr. Petit thought the symptoms could not have been entirely owing to disease, but *might* be the result of poison. Two apothecaries deposed, that they had sold the prisoner acetate of morphine,—and one of them twelve grains of the sulphate of morphine (by mistake printed sulphate of *soda*). Orfila deposed, that it was impossible from the *proces verbal* and the appearances, to conclude, that the deceased had died by poison. The appearances on dissection might have been by morphine, but they might also have been the effect of disease. It was proved (or thought so by the jury) that Castaing had forged a will of the deceased. This was strong moral evidence, and we have no doubt that the great strength of the said moral evidence has never reached us; for we are bound to believe, that a jury, (in a case involving no political matters) even in France, would lean to the side of mercy, if they possibly could. He was convicted by a majority of only two—seven against five. It is curious that, in a country where so much importance is attached to legal medicine, no ear appears to have been given to the medical evidence, even of Orfila!—But *all* circumstances considered we fear Castaing was guilty.

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*Homicide.** Claudius Noblin and John Jaunet, aged about five or six and twenty years each, had been drinking and carousing in several cabarets, during the 15th November, 1821. About 4 P. M. they quarrelled with two other individuals (a man and his wife) the companions of their debauch. From words it came to blows; and Jaunet received one on the head by a bottle, which prostrated him on the floor. His associate (Noblin) who was, at the moment, engaged in combat with his female antagonist across a narrow table, fell also deprived of sense. This double defeat put an end to the fray, and the spectators hastened to afford assistance to Noblin and Jaunet. The latter, who had been merely stunned by the blow which he received, quickly recovered—but Noblin died on the spot. This circumstance coming to the ears of the police, the body was or-

* Journal Universel des Sciences Medicales, October, 1823.

dered to be disinterred on the 19th November, two days after inhumation. On the body, there were few or no marks of external violence. The neck was short—the chest large—and much blood had escaped from both nostrils. The conjunctivæ were much injected. On dividing the cranial integuments, great quantities of black blood issued at each cut of the scalpel; and, on removing the skull, the vessels of the meninges, cerebrum, cerebellum, and in fact of the whole encephalon, were found enormously distended with blood. Besides this, there was an extravasation of blood into both lateral ventricles, especially the right—in short, there was here quite enough to account for the death of the patient independently of any external violence. On opening the chest, the lungs were found of a black colour, and extremely gorged with blood. It was thus evident that Noblin died in consequence of a violent determination of blood to the head and chest, accelerated no doubt by the state of inebriety and passion at the moment of the rencontre, and totally independent of any influence from an impression or blow *ab externo*.

Let us now revert to the case of Jaunet. His head presented a contused wound of nearly an inch in extent, accompanied by symptoms of concussion, which, however, were removed by quietude, low diet, and open bowels.

Now suppose Noblin had received this blow from the bottle, instead of Jaunet, what influence would the circumstance have had on the minds of the spectators and of the medical evidence? —It is to be feared that even the legal surgeon or physician would not have been able to divest himself entirely of prejudice on such an occasion. Upon serious reflection, however, it is manifest that the contusion received by Jaunet, would not have altered for worse or for better the fate of Noblin, had the latter received it himself.

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*Peritonitis resembling Poisoning.** A man 30 years of age, of good constitution, was seized after dinner, on the day before his marriage, with violent colicky pains, and sent immediately for a physician, who noted the following symptoms, viz. pallid countenance, with expression of great suffering—tongue and mouth dry—thirst—constant nausea—vomiting of liquids tinged with wine—violent pains in the abdomen augmented by pressure, but no intumescence—no evacuations by stool—urine scanty—pulse concentrated. *Twelve leeches to the anus—lavements—diluents*—four ounces of linseed oil that had been taken were vomited up. The next morning brought some alleviation of the symptoms, and the man returned to his own home

* Journal Général Aout, 1823.

from the house of his brother, where he had passed the night. On his arrival all the symptoms returned with increased violence, especially the vomiting and abdominal pains. Nevertheless, as every disposition had been arranged for his nuptials, he repaired to the place appointed, and afterwards to the festival common on such occasions. He was soon obliged to retire to bed, and to have emollient injections thrown up. A temporary relief followed; but was soon succeeded by intense fever, and increased vomiting. On the third morning the symptoms were the same, with the addition of abdominal tumefaction—no evacuation by stool—pulse small and concentrated—anxiety extreme—lipothymia. *Ptisans*, *lavements*, *semicupia*, *fomentations*. *4th day*. The vomiting has ceased, but the abdominal pains continue. In the evening, these last became abated, but lipothymia supervened upon the slightest movement. He died on the night of the fourth day.

A death so unexpected, and so soon after a dinner, among his friends, gave rise to strange suspicions, especially as a person had been heard to say, that if he married the woman to whom he was engaged, he would not long survive the marriage. The Commissary of Police therefore gave orders that the body should be examined in a medico-legal manner.

Dissection. On opening the abdomen, a considerable effusion of coloured and slightly fetid liquid was found. This was afterwards submitted to proper tests. The omentum was strongly injected, and adhered to the anterior parietes of the abdomen, and, in some places, to the surface of the intestines. The convolutions of the alimentary canal were adherent together in many places, with here and there membraniform flocculi of a purulent appearance. The superior surface of the liver was covered with an albuminous exudation, and the parenchymatous structure was gorged with blood. The internal parietes of the abdomen presented numerous traces of phlogosis, and some purulent exudations, with black spots, produced by congested blood—the mesenteric vessels highly injected. The interior of the œsophagus was natural—the stomach contained a few ounces of glairy and inodorous liquid, which was subjected to test—on its mucous surface, near the cardiac orifice, was a vividly red patch of no great extent—pylorus sound—some patches of red on the internal surface of the duodenum—as also on the mucous membrane of the small intestines, but less and less distinguishable in proportion as the distance from the stomach increased. The large intestines were sound, and no perforations were to be seen in any part of the alimentary canal. The liquids abovementioned exhibited no trace of poisonous impregnation, when submitted to the appropriate tests.

The evidence delivered in was, that the man's death was occasioned by a violent inflammation of the peritoneal covering

of the abdominal viscera, without any poison being discovered in the alimentary canal.

"Enfin, ce fait prouve de nouveau la haute importance des remarques que l'on trouve dans les ouvrages de M. M. Foderé, Laisné et Orfila, et desquelles on peut déduire l'aphorisme suivant:—*L'ensemble des symptomes de divers empoisonnémens peut être produit par certaines alterations spontanées des organes digestifs.*"

Our readers will be better satisfied with the medico-legal decision of the physicians than with the medical treatment of the case. A young man seized with abdominal inflammation on the eve of his nuptials, was suffered to die of that inflammation without a vein being opened to check the progress of the disease!

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*Poisoning by Nux Vomica.**—A woman, having a quarrel with her husband, swallowed nearly half an ounce of nux vomica. Half an hour afterwards she was found by Mr. O. sitting quite collected and tranquil, her pulse 80. Some little time was lost before an emetic could be procured, which was taken but did not produce effect. In a few minutes she was seized with convulsions, slight and transient at first, but rapidly increasing in force and duration. In one of these she expired, about an hour from the time she swallowed the poison. The vessels of the pia mater were found turgid with blood—an ounce of fluid in the ventricles—heart flaccid and empty—a slightly red patch, nearly half a hand's breadth in size, on the internal coat. No other morbid appearance.

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*Infanticide.**—A woman was tried at a county-town in Scotland for child-murder. She acknowledged concealment of pregnancy. The child's body was found in a chest covered with earth. She confessed having placed it there A piece of twisted calico was drawn twice round the neck, so as to produce a remarkable groove. Another piece was applied tight over the face, and knotted behind the head, so as to flatten the nose. The face was turgid and livid—the conjunctivæ strongly injected with blood. The umbilical cord was divided eight inches from the navel, and had not been tied. No other mark of violence on the body. The lungs were free from putridity, and swam in water, the same as when they are inflated. The air-cells visibly contained air. The examination was eleven days after delivery. The medical witness for the crown deposed, from these appearances, that the child must have been born alive, and that its death must have been caused by suffocation.

* Mr. Ollier. Med. Repos. 114.
† Ed. Journal, No. 1, New Series, Jan. 1824.

Three other medical men for the prisoner deposed unanimously, *that if the child had been dead for the period of eleven days, it was impossible for any medical man to come to a conclusion as to whether the child had been alive at the time of birth.* The woman was accordingly acquitted.

The medical evidence for the crown was, we think, perfectly justified in his deposition. Not so the evidence for the prisoner. There was no putrefaction to account for the lungs swimming in water at so early a period after death. The lungs indeed are peculiarly backward in running into putrefaction, if they have not been used in breathing. We accord with our cotemporary of the North in the severe animadversions which he has made on the conduct of the three medical witnesses above alluded to, who, by the way, had not been present at the opening of the body. The witness for the crown, however, was remiss in not examining whether the child bore marks of hæmorrhage from the untied navel-string. The question, on this subject, seems to have done injury to the crown witness.

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Infanticide.—That clause, in the statute called the Ellenborough Act, by which juries, on trials for the murder of newborn bastards, may find the prisoner guilty of concealment of birth, if not satisfied as to the perpetration of the capital crime, has had of late a very marked influence on the course of criminal justice. Erroneous statements, on the part of medical witnesses, as to the validity of physiological proofs, have so unsettled the opinions of judges, counsel, and jurymen, that the last have, with almost uniform disregard of the real tendency of such proofs, found women accused of this crime guilty of the misdemeanor only. Still we had reason to think that the previous inquiries of coroners' juries were sufficiently lax to send those to trial occasionally, who might, by a more patient and intelligent manner of investigation, have been saved from a calamity, to a female (still anxious to preserve the remains of reputation), little worse than condemnation. An error in the opposite extreme appears to have occurred a few weeks ago in the city of London.

An inquest was held on the body of an infant, concerning the fate of which there was glaring proof. The mother had been charged with pregnancy by several females; the bed and carpet were found bloody; the woman was taxed with having miscarried, which she did not deny; but even acknowledged that she was two months advanced in pregnancy. None of the women who were aware of her illness heard any cries, or suspected any thing beyond miscarriage, until the day afterwards, when the body of a child was found sewed up within the ticking of the bed among the feathers.

Mr. F. H. Ramsbotham attended the inquest, and gave evidence to the following effect:—The body was that of a female at the full time. The navel string appeared to have been cut by a sharp instrument, and was untied; at least no ligature appeared upon it. There was coagulated blood about the mouth and lips, with a scratch under the right ear, as if made by a finger nail; around this there were corresponding marks, with coagulated blood underneath. The lungs indicated respiration. At the right side of the root of the tongue there was a considerable laceration from the gullet, corresponding with the scratch and mark described, which extended nearly as low as the breast bone, and which might have been occasioned by the finger or any thing violently thrust into the gullet—it must have passed the mouth and entered the gullet, or there would not have been so extensive a laceration of the membranes, or such an extravasation of blood. Witness's decided opinion was, that the child had been suffocated by the instrument which had been thrust into its mouth, by which the windpipe was compressed, so as to prevent the access of air to the lungs; and that the child was born alive, and suffocated.

In reply to questions by the coroner and jury, witness considered that though a journey, which the accused had made the day before the event, might occasion premature labour, it would not have caused the violence; that there was more blood extravasated than would have been apparent had the force been applied after death. "The navel string is eighteen inches or more; and, consequently, the child is not so likely to have bled to death."* A finger thrust into the child's mouth on its being born would certainly prevent its crying. There was a laceration also on the left side of the gullet, without any external mark of violence.

Two other medical men corroborated this evidence.

The coroner, in addressing the jury, is represented to have observed, that they were reduced to a considerable difficulty as to the fact of the child's being born alive or not, it appearing, *from the evidence of the maid servants*, that this was not the case; but if they looked to that of the surgeon, he would ask whether they were not convinced that the child *was* born alive, and that immediate means were taken to deprive it of life, and prevent respiration?

After a very long discussion, the jury returned a verdict that the child was STILL-BORN!!

After this verdict the coroner said, he did not feel himself justified in saying before what he should now relate: that if this

* This cannot be the exact shape of the answer. Reporters are very ingenious in abridging many things, but we wish they would not exercise their powers on the statements of medical witnesses.

woman had been sent for trial (for no doubt effectual means were adopted for the "murder"), she would have been acquitted, he thought, of the capital offence, and punished for the minor crime; but now the law was evaded: there was an evident concealment of the birth which the law could not now punish, and, therefore, this woman had totally escaped.

We do not profess to know much about the law of evidence; but from the attention we have been able to pay to such questions as this, we are urged to express some surprise at the evidence of the women being placed in the balance against that of the surgeon, who seems to have accurately examined into the *best* proofs of vitality under such circumstances. We infer that the examination was *accurate*, though the process is not detailed, because we are fully convinced that no medical man would come to the conclusion that Mr. R. arrived at without pains, and those pains intelligently bestowed. The *positive* evidence of such a witness is worth the vague negatives of a thousand slovenly dissectors, who go into court and talk about explosions and absurdities,* of important doctrines which they have never studied. In the first place, we hold that the crying of a child is by no means necessary to establish the fact of *respiration;* and it is not legally required, even under civil process, for tenancy by courtesy,† in order to prove that it was born alive. Secondly, it does not appear that, had there been any crying, the witnesses *must* have heard it. We regret, for the sake of science, as well as justice, that so palpable a case is not likely to undergo a more formal and minute investigation.

Medical and Philosophical Intelligence.

Observations on the Functions of the Corpora Striata and Tuberculu Quadrigemina. By M. Magendie.—In my former researches I have shown that an animal, the hemispheres of whose brain are removed, sets off running with an agility of which prior to the experiment it did not seem to be possessed. In this rapid motion it passes over any obstacle which it may meet with, without appearing to see it; but the sense of hearing does not seem to be less energetic. On again investigating these phenomena, I have observed that it was not the loss of the body of the hemispheres which occasioned this rapid and irresistible movement, but the ablation of the corpora striata. If, in fact, both hemispheres, with the corpus callosum and the anterior

* Medical Jurisprudence, III. 98. Principles of Forensic Medicine, p. 345, second edition.

† Law books lay this down as having been *formerly* required, but being no longer so.

lobes, be removed from a young rabbit, without injuring the corpora striata, no motion forwards occurs: the animal pretty nearly maintains its gait, modified, however, in an evident manner by the pain and hemorrhage; its posture is not even altered when the grey matter which gives to the corpora striata their form of the segment of a curved cone is removed. I have several times abstracted this in the living animal, so as to expose the white fibres which, from the optic nerve, radiate and spread into the hemispheres, and no apparent modification has taken place in the motions. This fact is interesting, on account of the assertion of certain persons who attribute the origin of motion to the grey matter, whilst the white is in possession of sensation; an assertion which has lately been contradicted by the researches of M. Desmoulins in Comparative Anatomy.

What does not happen on the abstraction of the grey matter does not fail to occur on the removal of the white: so soon as we begin to implicate the latter, the animal exhibits inquietude, and endeavours to escape: the removal, however, of one of the two corpora striata still leaves the animal master of its movements, it directs them in different ways, and stops when it pleases; but so soon as both corpora striata are separated by a vertical section from the *thalamus opticus*, the animal throws itself forwards, and flies as if pushed onwards by an irresistible power.

This phenomenon occurred under my own inspection, without my being able to know the cause, under circumstances which are worthy of mention.

In the course which I gave this winter, on the *action of medicines*, I had placed in the ventricles of the brain a grain (gr. 82, troy) of emetic tartar in powder, and by chance the substance was more especially in contact with the corpora striata. After the antimonial had remained there for a quarter of an hour, all the assistants, as well as myself, were not a little surprised to observe the animals spring forward, and run with surprising agility. I know not how many conjectures passed in our minds, without the true one occurring to us; but on repeating this experiment, and observing that the corpora striata were nearly destroyed by the chemical action of the emetic tartar, I recognised the real cause of the phenomena: so that the integrity of the corpora striata, in their white portion, is connected with the direction of motion and the will.

I have observed, in a former communication, that the ablation of the optic thalami occasions much greater disorder than that of the corpora striata, for the animals lose their power of motion forwards as well as that of keeping upright; and that these results are still more increased by the removal of the tubercula quadrigemina. Some recent experiments induce me to modify this opinion.

It is very true that on cutting vertically behind the thalami optici through the whole substance of the medullary matter, the above effects are produced: it is also certain, that on cutting in the same manner behind the tubercula, the limbs, previously separated, approach and cross each other; but these different phenomena only take place in proportion as we implicate the medullary layer situated immediately on the basis cranii. If we confine ourselves to a section

which only implicates one half the substance of the medulla oblongata, the effects above mentioned are not developed. I have seen young rabbits from which the grey matter of the corpora striata, the upper half of the thalami optici, and the four tubercula quadrigemina, had been removed, run and direct themselves at will. But I had not implicated the white fibrous matter which radiates from the pyramids to the hemispheres. It would appear that it is especially at this part of the brain that the faculties relative to motion are situated.

I think, moreover, that I have established that the sensibility is less acute there than in the medullary matter situated above it; so that the distinction of the two properties, which is so evident in the spinal marrow, would also be maintained in the medulla oblongata.

I have performed some experiments which seem to throw some light on the functions of the tubercula, particularly of the anterior.

I have, for a long time, shown, in my lectures on experimental physiology, that the wounding of the two thalami optici, in birds, induces the loss of sight. I made this experiment in a very simple manner: with the point of a large pin, I just wounded, through the parietes of the cranium, the tubercula in the cavity of the basis of the cranium, where they are situated. The wounding of one tubercle only enfeebled the sight; but I have never been able to prove whether there was a decussation in the effects—that is to say, whether the lesion of the right tubercle produces the loss of the left or right eye.

In order to judge of this decussated or non-decussated effect, I performed the following experiment:—I rendered the eye of a bird incapable of action, making its cornea opaque; and after twenty or thirty hours, I examined the optic nerves and the tubercula. I found, 1st, that the nerve of the diseased eye was wasted and yellow; 2d, that the atrophy existed beyond the decussation, and as far as the optic tubercle of the opposite side; 3d, that the tubercle had evidently become diminished in size; 4th, that the medullary matter of the nerve had disappeared at the interior of the fibrous sheath, where it was replaced by a yellowish cellular tissue; 5th, that the pearly radiating lamina, which is situated at the surface of the tubercle, no longer existed, and that the surface of the latter had become yellowish nearly like the nerve. These effects are often visible twelve days after the bird has ceased to see with one eye. I have constantly observed them in all the experiments which I have made on this subject.

This is the result of my observations on birds; but nothing similar took place in the mammalia. After six months, or even a year, after the loss of an eye, the optic nerve is merely wasted and yellow *before* the decussation; *beyond*, the two nerves, as well as the tubercles, are in a healthy condition. There are, however, some well authenticated examples, where the atrophy extended the whole length of the nerve: sometimes, however, the effect was in a cross direction, and occasionally it did not exist. There is, in the cabinet of comparative anatomy of the Museum at Paris, the brain of a one-eyed horse, where the atrophy extends as far as the tubercles of the opposite side. I have lately observed a similar case in a dog.

Man is in the same condition as the mammalia: the loss of each

eye induces atrophy of the nerve, but it is very rare that it extends beyond the decussation. I have lately opened the body of a one-eyed individual, who had been so for thirty years: the optic nerve was wasted prior to the decussation, but it was healthy beyond it. In a girl who died during the last month at the Hôtel Dieu, and who had been blind of one eye for seven years, atrophy of the nerve was scarcely visible.

These latter facts have not escaped the sagacity of authors who have treated of this question, and recently of M. Vrolick.

I have made some trials, similar to those which I have just related, on reptiles and fishes; but, after several months from the cessation of the action of one of the eyes, I perceived no change in the optic nerve: probably I ought to have waited a longer time before I destroyed the animals.

May it not be concluded, from what has been observed, that birds are peculiarly circumstanced, as regards the medullary matter of the optic nerve and the functions of the optic tubercles? It seems that in them the existence of the medullary matter in the optic apparatus is in a ratio with the integrity of the action of that organ.—*Journal de Physiologie, Octobre*, 1823.

Peculiarity in the Formation of the Teeth in the Guinea Pig. By M. Em. Rousseau, D.M.P.—In a letter addressed to the *Académie Royale de Médecine* of Paris, M. Rousseau relates that he had noticed the guinea pig lose its first molaris four or five days before its birth, which was absorbed in the uterus of the dam, whence the fœtus was expelled with its teeth sufficiently formed to enable it to nibble immediately.—*Bullet. des Scienc. de la Societ. Philomat. Oct.* 1823.

On Cancer of the Heart, with Cases. By MM. Andral and Bayle.—The development of scirrhous, and encephaloid or medullary structures in the heart, is doubtless very rare, as it has not been observed by many modern physicians who are much engaged in pathological research. MM. Bayle and Cayol say (*in the article Cancer, in the Dictionnaire des Sciences Medicales,*) that they have never seen cancer of this organ. M. Laennec also says, that he has never observed in the heart any encephaloid structure, or any other species of cancerous disease. M. Recamier, however, has found the heart in part converted into a scirrhous substance resembling hog's-skin, in a subject which also had cancerous tumours in the lungs.

M. Cruveilheir (*Essay on Pathological Anatomy*) appears to have seen, in an old man, an organic lesion of the heart, having the characters of cancer. It consisted, he states, of cancerous masses, of the tuberculous form, of which the greater number were seated on the surface of the heart, and a few only in its substance.

In 1813, M. Rullier read to the Society of the Faculty of Medicine of Paris, a case of cancer of the heart (*Bulletins de la Faculté*, Tom. III. p. 357). A man, aged thirty-five years, of a rickety habit, and subject to catarrhs, was seized, soon after an attack of peripneumony, with a pain in the left side of the chest, with great oppression.

The abdomen was painful, especially towards the right side, where he felt a considerable tumour. The patient always lay on his left side, which did not sound when struck. Œdema of the extremities gradually supervened, and at the end of much suffering he expired.

On *dissection*, the lungs were found in a healthy condition; but the heart was more voluminous than natural, and its cavities enlarged. The texture of this organ presented scarcely any traces of its primitive organization: the whole of its muscular substance formed not more than a twelfth of its mass; the rest, that is eleven twelfths, was composed of a scirrhous, and partly carcinomatous substance, forming irregular prominences, of which the greater number extended from the external to the internal aspect of the organ. A large carcinomatous tumour was found in the mesentery: a scirrhous degeneration of structure was also observed in several parts of the parietes of the intestinal canal.

In a work recently published, by M. Ollivier, on the Spinal Cord and its Diseases (p. 262), a case of cancer of the heart also is to be found. A woman, aged forty-six years, died of an attack of apoplexy at the Hospital Salpêtrière, in 1822. No particular symptom had betrayed an affection of the heart before her death.

On *dissection*, the muscular fibres of the parietes of the right ventricle were observed to have been changed into a yellowish-white medullary tissue, offering all the characters of the encephaloid structure. This cancerous degeneration of texture occupied only the inferior half of the muscular parietes of this ventricle: the ventricle of the left side was sound.

Scirrhous tumours have been also mentioned, by Senac and Hildanus, as having been found by them in the heart. The three following cases place the occasional supervention of this form of organic lesion still farther beyond doubt, and are in other respects interesting.

Case 1st. A man, aged fifty-six, was admitted into *de la Charité* in May, 1821, with all the symptoms of hypertrophy of the parietes of the left ventricle of the heart. His pulse was hard but regular. He complained of orthopnœa, and was anasarcous. He died on the eighth day after his entrance into the hospital.

"*Dissection.* On bringing the heart into view, we were struck with the number of irregularities which its posterior aspect presented. In cutting through these irregular prominences, we found them formed of a very hard tissue, bluish grey and semi-transparent at some parts, at others white and more opaque, and marked by red lines which crossed each other, leaving between them areolæ of variable forms and sizes. This texture occupied nearly all the external paries of the right ventricle: the white colour appeared to extend into its internal membrane. In a few points only could the fasciculi of muscular fibres be discerned, and there they appeared discoloured and wasted. The muscular fibres were more distinct towards the internal surface of the ventricle. The columnæ carneæ were sound. The parietes of the right auricle presented throughout the same kind of morbid texture; and the part which separates the orifice of the two venæ cavæ was destitute of its fibrous structure. The cardiac

artery was sound in the midst of the cancerous disease. The left ventricle was enlarged, and its aortic orifice narrowed by ossification."

Case 2d. "A lapidary, thirty-seven years of age, had enjoyed a good state of health until his thirty-fifth year. He then became asthmatic. During five or six months afterwards he felt only difficulty of, and slight pain during, respiration: at the end of this period he was seized with a violent pain in the region of the heart, extending through the left side of the thorax. He suffered, at the same time, violent palpitations, increase of the dyspnœa, vomiting, and a momentary loss of recollection. At the end of an hour the pain diminished, and, on the following day, he was restored to his usual state. During the year of his life that followed this attack, the pain on respiration increased slowly, and he experienced seven or eight paroxysms of the same kind as that now described: he compared the pain which he felt during these paroxysms to that of toothach. He was admitted into *La Charité* about the end of November, 1821. At this period he was emaciated: his face was remarkably pale and yellow. He had an evening exacerbation of fever, without increase of perspiration. On examining the state of his organs, they all appeared regular in their functions; and we were at a loss how to explain the cause of the marasmus and hectic fever with which he was harassed. In the course of December he frequently felt lancinating and passing pains in the region of the heart: these were always of the same character. He also occasionally had palpitations; but in the intervals betwen these auscultation could not detect any very appreciable lesion of the heart. About the commencement of January the inferior extremities, then the superior, and, lastly, the face, became œdematous, and the patient died suddenly without pain.

"*Dissection.* The muscles were pale and thin, and the body entirely deprived of fat. The external paries of the right ventricle of the heart was occupied by an irregular tumour, which, from its large size and form, resembled a supernumerary heart: it extended from the point of the ventricle to its base, and passed beyond this latter part, encroaching, to the extent of a few lines, upon the structure of the auricle. This tumour had replaced nearly all the muscular fibres, of which only a very thin layer was perceptible at the internal surface of the ventricle, and at several points it projected considerably into this cavity: it was entirely formed of the encephaloid tissue, partly softened. The other portions of the heart were sound, as were also the lungs. The cranial and abdominal organs presented nothing remarkable."

Case 3d. "An old soldier, who had been in a state of mental imbecility for several years, had a tumour on his left cheek, which had rapidly increased, and, in July, 1821, had approached a state of ulceration. From that time to the first of October, an ichorous and fœtid matter continued to flow from his mouth; and the pulse was occasionally very quick. Respiration appeared perfectly free; the action of the heart excited no attention; and the patient preserved a considerable fulness of habit. He died the 23d of October, without evincing any new symptom deserving remark.

"*Dissection.*—The body was muscular and fat. The skin every

where presented a remarkable redness, resembling that of erysipelas, and differing essentially from the lividity frequently observed after death. The inguinal glands were swollen and red.

"The tumour of the left cheek filled the maxillary sinus, and rested beneath on the lower jaw: in this situation the gums were red and swollen. The superior maxillary bone and the teeth adhered to the tumour towards its upper and internal aspects, and were destroyed to a considerable extent. The part of the tumour projecting into the mouth was deeply ulcerated, and bathed in a brownish, ichorous, and very fœtid pus, which seemed to flow also from the carious bones. When divided in various directions, the tumour presented a uniform greyish colour, and a lardaceous consistence and appearance.

"About eight ounces of limpid serosity was found in the pericardium. The heart, which was about a third more voluminous than in its natural state, offered to the touch several of its parts considerably hardened. The cavity of the right auricle was much dilated, its parietes thickened, condensed, and possessing a greyish colour, and lardaceous structure. The orifice of the venæ cavæ was straightened. The circumference of the right auriculo-ventricular orifice presented no trace of its original structure, but was transformed into a lardaceous matter of an inch and a half in thickness. The left auricle was altered in a similar manner, and the pulmonary veins were contracted at their orifice. The ventricles were sound, but the inter-ventricular structure was in a cancerous state. The internal membrane of the auricles offered here and there lively red spots, arising from an injection of blood into the minute vessels. The mucous membrane of the intestines was red, and lined with a bloody mucosity."

"The facts which we have adduced are doubtless too few to enable us to trace the history and symptoms of this rare form of organic disease of the heart. A few corollaries, not entirely destitute of importance, may, however, be deduced from them. They evidently show that the muscular fibres of the heart can be partly destroyed, without any very evident derangement of the circulation. The third case shows that, in the heart, as in other organs, the cancerous structure produces no disturbance of the general nutrition of the body, as long as softening of it does not supervene. The second case does not contradict this position; for here there existed marasmus, hectic fever, and softening of the cancer. In neither of the cases was death the *immediate* result of the influence exercised by the cancerous disease on the circulation. In the cases recorded by MM. Rullier and Ollivier, the patients died of an intermediate disease. In the first of the cases here related, death seemed to result more directly from aneurism of the heart. Lastly, in the second case, it was owing to the change produced in the nutritive functions that the cancer of the heart occasioned the fatal termination."—*Révue Médicale, Fevrier*, 1824.

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Inoculation of Syphilis, and Broussaism.—Of the various idle speculations to which the *new medical doctrine* of Broussais, as it has

been termed, has given rise, there is one that has lately been the occasion of a catastrophe, which we think must make some impression on the feelings of those, provided they are not very callous, whose doctrines have led to the melancholy result. It may be in the memory of our readers that we briefly alluded, in a former Number of this Journal, to a Treatise on Fever which had been published by a M. Boisseau, a *folliculaire* of the *Journal Complementaire*, containing a most elaborate and most unsatisfactorily concocted theoretical and practical explanation of that important order of diseases, according to the views of Broussais, of whose doctrines he is—*sed haud passibus æquis*—the zealous promulgator. This M. Boisseau, and a M. Jourdan, the *Feu* M. Jourdan of the *Dictionnaire des Sciences Médicales*, and the Omega of the *Journal Universel*, will neither admit the existence of specific diseases nor of specific remedies, because the *Doctrine Physiologique* cannot explain either their existence or their mode of action. Seduced by these distempered reveries, three young students in the Parisian hospitals inoculated themselves, in the month of November, 1823, with the matter of a venereal chancre. In one of them the inoculation was followed by swelling of the glands in the axilla: this was treated by antiphlogistics, but the tumefaction went on increasing: the glands suppurated, and the axilla was the seat of a considerable loss of parts. The second exhibited several unequivocal symptoms of venereal infection: and, in the third, the puncture became inflamed and ulcerated; a chancre appeared, possessing all the syphilitic characters, which was treated in the same manner, viz. by antiphlogistics, carefully abstaining from every mercurial preparation. The ulceration made terrific progress; but the misguided fanatic still obstinately refused to make use of mercury. At last, he determined upon consulting one of the Professors of the *Faculté de Médecine*, who pronounced the ulcer to be syphilitic, and to require the employment of mercury. The young man, on this opinion being communicated to him, returned to the hospital, and put an end to the disease, and, at the same time, to his existence, by opening the crural artery.

Some very forcible remarks are indulged on this melancholy event and the pernicious doctrines which gave rise to it, by M. Amédée Dupau, a physician of the first talents and character, in the *Révue Médicale*—a journal of which he is one of the editors-in-chief, and the pages of which are as conspicuous for talent, method, and information, as the two to which we have above alluded are, generally speaking, deficient in them.

Our sentiments, indeed, of the *Journal Complementaire* and the *Journal Universel*, are strongly evidenced by the fact, that although, for the few last years, we have regularly received them, scarcely one article has appeared which was considered worthy of being extracted. From such productions as these it is that a strong prejudice has almost universally been imbibed in this country against French medical science—a feeling, indeed, which prevails to such an extent amongst numerous individuals, as to induce them to attach no weight whatever to assertions proceeding from the other side of the Channel. The exertions, however, of several writers of true genius, especially the in-

telligent editors of the *Révue Médicale*, the *Archives Générales de Médecine*, the *Journal de Physiologie*, and the *Gazette de Santé*, which last, under the able administration of its present editor, M. Miquel, has attained a degree of usefulness, of which it seemed to be previously unsusceptible, have been the means of raising the medical knowledge of their brethren to a more respectable degree in the scale of estimation; and we have no doubt that in the course of another generation, when the petty envy, hatred, and malice, which possess the minds of several of the existing Practitioners shall be buried, with their owners, in the "tomb of all the Capulets," a reciprocity of respect will be entertained between the learned of both nations, of which science cannot fail to reap the advantages.

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Case of Cancer of the Stomach, with Perforation of the Vena Porta. By M. Casimer Broussais.

A non-commissioned officer, aged fifty-one, of a lymphatic temperament, was admitted into the Military Hospital of Val-de-Grace, labouring under diarrhœa, which had continued for six months. He was emaciated and very pale; the extremities were cold; and there was an evident tumefaction in the epigastric region.

Under an amylaceous regimen, he gradually improved for about twenty days, at the expiration of which time he was attacked with constipation, meteorismus, frequency of the pulse, heat of the skin, and shivering. Death soon supervened.

Dissection.—Much serous fluid was found in the abdomen, whilst the stomach, omentum hepato-gastricum, pancreas, the commencement of the duodenum, the subjacent cellular tissue, and the vena porta, were conglomerated into one mass: the cavity of the stomach, filled with black blood, towards the pylorus presented a carcinomatous affection four inches in diameter, in the centre of which an ulceration leading into the vena porta, by which unquestionably the accumulated blood had been supplied.—*Bull. de Société. Philomat. Sept.* 1823, *p.* 156.

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Case of Oblongation of the Uvula producing Symptoms analogous to those of Chronic Pneumonia. By M. Cuynat, Chirurgien-Major, &c.

A female, thirty years of age, born of healthy parents, and possessed herself of a healthy constitution, who had contracted a cough, from frequent exposure to vicissitudes of temperature, after a year's suffering, presented the following symptoms, notwithstanding the "use of the most *heroic* and the most varied means which were considered proper for retarding the progress of a severe disorganization of the parenchyma of the lungs. The respiration was oppressed; a considerable constriction of the thorax existed; and acute, lancinating, and fugacious pains, increased on coughing and on full inspiration, were felt in that cavity; the patient was continually attempting to swallow or to hawk up mucus from the throat; a fixed pain, accompanied with tickling, existed in the larynx; the

appetite was almost null; the tongue was sometimes white, and sometimes in a natural condition; her pale countenance, extreme emaciation, depressed condition, both moral and physical, seemed, however, to indicate the profound lesion of some important organ; the chest, carefully explored, resounded very well in every part, except at the upper portion, where the sound seemed a little dull; the pulse was sometimes small, unequal, and at other times frequent and full, and frequently changed in less than half an hour to one or other of these conditions."

M. Cuynat, on examining the fauces, found the uvula elongated, loose on the base of the tongue, and distended with serous fluid. It occurred to him that all the symptoms experienced by the patient were occasioned by the elongation of this appendix. All internal treatment was discontinued, and the superabundant portion of the uvula was cut off. Fifteen days had scarcely elapsed before all the symptoms previously indicated had ceased: the patient was soon completely restored to health.—*Révue Médicale*, Tom II. p. 353, and *Journal Général de Médecine, Dec.* 1823.

Observations on Inflammation of the Diaphragmatic Pleura. By M. Andral, Fils, D. M.

M. Andral's object, in this *Mémoire*, is to draw the attention of Practitioners to an important variety of pleurisy, indicated by particular symptoms, the diagnosis of which has hitherto been very obscure, and the prognosis is always very unfavourable. M. Andral first relates several cases of diaphragmatic pleuritis, either isolated or existing at the same time with inflammation of the costo-pulmonary pleura, or even of the parenchyma of the lung. He next details the general history of diaphragmatic pleurisy, and considers the following as its characteristic symptoms:—1st, A more or less acute pain along the cartilaginous edges of the false ribs, most commonly extending to the hypochondria, and occasionally as far as the flank. 2d, Complete immobility of the diaphragm on inspiration. 3d, A very remarkable anxiety, more especially shown by the sudden alteration of the features. 4th, Orthopnœa, with bending of the trunk forwards. There are also other symptoms present, such as hiccough, nausea, vomiting, convulsions of the muscles of the face, and delirium. Jaundice also occurs in the case of diaphragmatic pleuritis of the right side, but this is not a constant symptom. Comparing these various symptoms with those which constitute the paraphrenitis of Boerhaave, M. Andral endeavours to prove that the latter disease was identical with the diaphragmatic pleuritis which he describes.—*Archives Générales de Médecine, Octobre*, 1823.

Examination of a Body soon after Parturition.

In October last, the body of a female, apparently about the age of thirty, was brought into Mr. Mayo's dissecting room: it was fat and muscular, not in any ways misshapen, and somewhat about the middle height of women. This person appeared to have died of

uterine hemorrhage, a short time after delivery at the full period, for the uterus was very capacious, its substance 6-10ths of an inch in thickness, its orifice open, and, when disposed in a circular form, about two inches in diameter. Both the uterus and vagina contained a quantity of clotted blood. The inner surface of the uterus was thinly covered with shaggy processes of flocculent membrane, and appeared abraded here and there, and when the part was injected with size and vermilion, the injection escaped into the cavity of the womb through many small orifices on its inner surface.

The muscles of the abdomen were found to have their usual appearance, except that the recti were between four and five inches asunder.

It was ascertained that the upper part of the vagina, where it joins the uterus, could be readily exposed without injury to the peritoneum, after an oblique incision through the fore part of the abdominal parietes.

The pelvis was well formed, and of the usual dimensions; but it was found that the sacro-iliac joint on either side was loose, so that the ileum and sacrum could be separated on each side to the extent of a third of an inch on the fore part of the joint. The ligamentous fibres, which run across from the ileum to the sacrum, were entire; but the usual connecting medium within, between the bony surfaces, was dissolved.

The symphysis of the pubes had been cut through before the condition of the sacro-iliac joint had been noticed. The sacro-sciatic ligaments were very lax.—*Mayo's Anat. and Phys. Comment. No. II. p.* 46.

Case of Hypertrophy of the Heart.—M. Chomel, at a late sitting of the *Académie de Médecine* of Paris, presented the heart of a man who had died at the *Hôpital de la Charité*. The parietes of the right ventricle showed such a hypertrophy, that its cavity was almost extinct. The orifice of the pulmonary artery was so considerably contracted, that it could not admit the extremity of the little finger. In the remainder of its extent, the pulmonary artery was of its usual diameter. The other cavities of the heart had preserved their natural proportion. The patient had laboured under the ordinary symptoms of aneurism. There was every reason to believe that, in this individual, who was quite young, the extreme narrowness of the opening, between the right ventricle and the pulmonary artery, was congenital, and that it favoured the development of the hypertrophy of the right ventricle.—*Archives Générales de Méd. Septembre*, 1823.

Note by the Editor of the American Journal of Foreign Medicine.

In our last we republished Dr. Williamson's interesting paper on the circulation. It is but justice to state, that similar experiments were made, and similar conclusions deduced, in this city, several years ago, by our friend Richard Harlan, M. D., Professor of Comparative Anatomy to the Philadelphia Museum. They were published in the Eclectic Repertory, vol. ix. p. 122.